PLINY

NATURAL HISTORY

WITH AN ENGLISH TRANSLATION
IN TEN VOLUMES

VOLUME X

LIBRI XXXVI–XXXVII

BY

D. E. EICHHOLZ, M.A.,

READER IN CLASSICS, UNIVERSITY OF BRISTOL

CAMBRIDGE, MASSACHUSETTS
HARVARD UNIVERSITY PRESS
LONDON
WILLIAM HEINEMANN LTD
MCMLXXI

PLINY

NATURAL HISTORY

X

LIBRI XXXVI–XXXVII

419

American ISBN 0–674–99461–2
British ISBN 0 434 99419 7

First printed 1962
Reprinted 1971

Printed in Great Britain

CONTENTS

PREFACE

I WISH to record my debt to Dr. Stanley Smith, some time Reader in Palaeontology in the University of Bristol, who first attracted my attention to the problems of ancient mineralogy. When he died in 1955 we were engaged on work which had led us on occasion to discuss certain passages in Books XXXVI and XXXVII. Where I have summarized his views on such passages in my notes, I have added his name. It gives me pleasure to be able to pay this tribute, however small, to a distinguished scientist.

I wish also to thank Dr. F. C. Phillips of the University of Bristol, who has patiently answered my questions about gemstones, Dr. John Harris of Christ Church, Oxford, who has generously provided me with a wide range of information concerning Ancient Egypt, and Professor W. Beare of the University of Bristol, who has kindly read the proofs. I should mention, however, that I alone must bear the responsibility for the errors that remain in spite of their help.

INTRODUCTION

The text printed in this edition is largely identical with Mayhoff's, but differs from it in some 120 instances. Sometimes a different reading has been preferred, particularly if it improves the sense; and not infrequently Mayhoff's emendations have been rejected as superfluous or unsuitable. Several passages omitted or bracketed by Mayhoff as interpolations have been allowed to stand in the text. In this respect, Mayhoff appears to attach too much importance to B, which in spite of its superiority is sometimes careless or facile. He does not, however, refrain from curtailing even B. The present text is more conservative than Mayhoff's, and so conforms to recent tendencies. Nevertheless, some new readings have been offered in passages which seem to invite or demand a remedy.

The difficulty of identifying the stones mentioned by classical authors is well known. Nomenclature in itself is often misleading. In Pliny, for example, *chrysoprasus* is not chrysoprase, nor is *topazus* topaz or *sapphirus* sapphire. *Basanites* (v.l. *basaltes*) is probably never basalt. *Smaragdus* includes many stones that are not emeralds, and *carbunculus* some that may not be carbuncles. *Iaspis* embraces many stones that are not jaspers, while of genuine jaspers it includes at the most the green variety. For reasons such as these, Latin names of stones have usually been retained in the translation.

Interpretation is rendered even more difficult by Pliny's lax use of certain terms.

A perplexing word is *pinguis* and its derivatives (see Vol. VII, pp. xi–xii). In XXXVII. 66 *pingui* seems to mean 'rich' (in colour); in 69 and 70 *pinguiter* and *pingues* should mean 'massively,' 'massive'; in 105 *pinguitudo* must mean 'greasy appearance' (cf. in 94 *pingues*), while in 115 *pingui* is 'dull.'

Again in XXXVII. 79 *crassitudine* might be 'opacity,' but is probably just 'thickness,' whereas in 106 *crassiores* is 'opaque,' but *crassius* (with *nitent*) should mean 'with a duller lustre.' In 21 *crassitudine* is translated as 'bulk.'

Nitor and *fulgor* can be puzzling. Although both usually refer to lustre, they are sometimes used of brilliance in colour, as in XXXVII. 129 (*nitor*), and in 121, 125 and 156 (*fulgor*).

REFERENCES TO A THEORY OF THE FORMATION OF STONES

A few brief references to such a theory call for some explanation.

In XXXVI. 161, we are told that *lapis specularis* (selenite) is formed when a liquid is frozen and petrified 'by an exhalation in the earth' (*terrae quadam anima*). In the first three books of the *Meteorologica* Aristotle describes the characteristics and manifestations of two exhalations (ἀναθυμιάσεις), one of which is dry, smoky and potentially fiery, while the other is moist, cool and potentially frosty (for it

forms hoar-frost, 347a 12 ff.). At the end of the third book Aristotle describes the effects produced by the two exhalations when they are trapped underground. Under these conditions, the cool, moist exhalation, to which Pliny refers in the present passage, produces metals (378a 26 ff.), certainly as their material cause and probably (though this is not explicitly stated) as their effective cause as well.

Aristotle does not mention the formation and hardening of *stones* by the cool exhalation, but that such an idea eventually arose in the Lyceum is not improbable. For again at the end of *Meteorologica* III (378a 21 ff.) he states that the dry exhalation produces by combustion (ἐκπυροῦσα) not only coloured earths, but also stones that cannot be fused, only to show later in *Meteorologica* IV (388b 26 ff.) that infusible stones can be produced also by cooling. This fact seems to have been accepted by Theophrastus, who asserts (*de Lap.* 3) that it is possible for some stones to be produced by heating or by cooling. He cautiously refrains from ascribing any particular stones to the latter process. Nor did he know of selenite, unless by chance he includes it under γύψος. Pliny's statement clearly originated with a later and more dogmatic thinker. It is preceded by a reference to Spain which immediately calls to mind the Stoic philosopher Posidonius (*c.* 135–50 B.C.), who studied Spanish mines (Strabo III. 2, 4) and who was keenly interested in the formation of stones, as is shown by a passage of Diodorus Siculus (II. 52, 1–4), which is probably derived from him. Seneca (*N.Q.* II. 54, 1) confirms that the two

exhalations played a part in the physical theories of Posidonius.[1]

The dry exhalation is at work in forming stones in XXXVII. 21, where Pliny records the view that myrrhine is a liquid compacted underground by heat (*umorem sub terra putant calore densari:* in XXXVII. 48 the dry exhalation is called more precisely *caloris anima*). Aristotle, as we have seen, ascribed the formation of infusible stones and coloured earths to the dry exhalation, and Theophrastus mentions it explicitly in connection with coloured earths (*de Lap.* 50). Obviously both of them regarded the dry exhalation as a hardening and as a colouring agent. Whether they extended its colouring activities to brightly coloured gems and gem-like stones we cannot tell: there is no reason why they should not have done so, although the cautious Theophrastus might well have refused to commit himself. Posidonius was bolder, if we can trust the evidence of Diodorus in the passage already cited (II. 52, 1–4). Here the brilliantly coloured gemstones of India and neighbouring countries are envisaged as very pure rock-crystal compacted not by cold but by fire and ' tinted in many colours by an exhalation ' (βαφῆναι δὲ πολυμόρφως ἀναθυμιάσει πνεύματος), which is especially strong in these regions. Diodorus does not mention myrrhine (fluor-spar), which during the greater part of Posidonius' lifetime was probably still a rarity in the western world, but Juba or Xenocrates or who-

[1] For Diodorus and Seneca, see K. Reinhardt, *Poseidonius*, pp. 132–133, 172, where Reinhardt's comments do not seem to have been questioned in the controversies aroused by his book.

ever was responsible for the view expressed by Pliny seems to have been influenced by the general theory of Posidonius, a theory which Pliny, had he cared to do so, might have applied widely to many brightly coloured stones. Pliny, however, was not greatly interested in such speculations.[1] He introduces them only incidentally as isolated curiosities. In this instance he happens to have used a source which reflects an interest in the true nature of myrrhine. In general, when he is discussing stones, he is largely concerned with moral, practical and historical considerations, and does not fail to mention, however scornfully, the supposed magical properties of gemstones which claimed the attention of writers such as Sotacus from the 3rd century B.C. onwards.

Another passage which may ultimately owe something to Posidonius is XXXVII. 23, where rock-crystal is said to have been compacted by intense frost.[2] This, however, was a common idea because κρύσταλλος means both ice and crystal, and the theme must have been frequently discussed, as is

[1] He may also have been sceptical: his statement concerning the formation of rock-crystal (XXXVII. 23) is followed by *certe*, 'at any rate.' However, his view as to the formation of selenite leaves him with no doubts whatsoever (*manifesto apparet*, XXXVI. 161) because observation seems to support it.

[2] Reading *concretum* for *concreto*. Unless Pliny has misunderstood the idea, he must mean that the frost is the hardening *agent*, not the *material* that is subjected to hardening, for this latter is a *umor* (XXXVII. 26). Both Diodorus (l.c.) and Seneca (*N.Q.* III. 25, 10) agree that 'cold' is the effective cause of ordinary rock-crystal. With *gelu vehementiore concretum* compare Seneca's phrase *longioris frigoris pertinacia spissatur*.

clear from the number of authorities cited by Pliny. In the Alps at least, rock-crystal was, it seems, thought to occur at or near the surface (XXXVII. 27). Hence the effective cause would be not the cool exhalation trapped underground, but the cold air above ground. That this topic interested Posidonius is suggested by a passage in Seneca (*N.Q.* III. 25, 10), which may well have been derived from him.

Seneca in this passage confronts us with a fresh point. He describes the material of rock-crystal as 'rain water containing a very little earthy matter' (*aqua caelestis minimum in se terreni habens*). Pliny, however, calls *lapis specularis* and myrrhine in their original state simply 'a liquid' (*umor*) and rock-crystal *caelestis umor* (XXXVII. 26). Similarly Diodorus states that the rock-crystals which are tinted by an exhalation are of 'pure water' (ἐξ ὕδατος καθαροῦ). We may suspect that Seneca's description is the more accurate, and that Diodorus and Pliny (or Pliny's authorities) are speaking loosely. A similarly loose use of language occurs already in Theophrastus, who in the first sentence of his book *de Lapidibus* states that all stones, including the more uncommon kinds (*i.e.*, gemstones), are of *earth*, and later (*de Lap.* 27) describes a stone that was partly a *smaragdus* and partly an *iaspis*, 'as though the transformation from water (ἐξ ὕδατος) was not yet complete.' Pliny in his rendering (XXXVII. 75) translates ἐξ ὕδατος as *umore*. We can hardly suppose that Theophrastus was guilty of a flagrant inconsistency. Consequently by 'water' in this context he must mean water in which earthy

particles were suspended;[1] and even the 'pure water' of Diodorus is probably a rhetorical exaggeration which must be modified in this sense. It is, however, just conceivable that Posidonius did not accept the fundamental distinction made by Theophrastus (*de Lap.* 1) that stones are of earth and *metals* of water.

Thus we find in Pliny random allusions to a theory regarding the formation of transparent and semi-transparent stones. According to this theory, which appears to have been developed by Posidonius, the raw material of such stones was water, possibly impregnated with earthy particles; and this liquid was compacted either by cold in the atmosphere or by one or other of two exhalations, colours being imparted to coloured stones by the dry exhalation, which also hardened them. The theory as a whole must have been unknown to Pliny. Nevertheless, the interest in natural phenomena which Posidonius aroused was strong enough to flourish in succeeding generations,[2] and thus left its mark on Pliny's sources.

SELECT BIBLIOGRAPHY

K. C. Bailey, *The Elder Pliny's Chapters on Chemical Subjects*, London 1932. (Part II includes the

[1] We may add in this connection that he was strangely impressed (probably through the influence of the physician Diocles of Carystus) by the belief that the *lyncurium* gemstone was formed by the urine of the lynx (*de Lap.* 28, quoted by Pliny XXXVII. 52). Theophrastus may have supposed that the raw material of gemstones in general was similarly compounded.

[2] See A. D. Nock in the *Journal of Roman Studies*, vol. XLIX (1959), p. 14.

text, with a translation and notes, of N.H. XXXVI, 126–203.)

Sydney H. Ball, *A Roman Book on Precious Stones*, Los Angeles, 1950. (This contains a translation of N.H. XXXVII with introductory chapters and a commentary, but the commentary is affected by the translation, which is merely a modernization of Philemon Holland's version.)

C. E. N. Bromehead, 'Geology in Embryo,' *Proceedings of the Geologists' Association*, lvi, part 2 (1945), pp. 85–134.

A. Furtwängler, *Die antiken Gemmen*, Leipzig and Berlin, 1900.

K. Jex-Blake and E. Sellers, *The Elder Pliny's Chapters on the History of Art*, London, 1896. (This includes the text, with a translation and notes, of N.H. XXXVI. 9–44, 90, 95, 177, 184, and XXXVII. 8.)

C. W. King, *Precious Stones and Gems*, London, 1865.

A. Lucas, *Ancient Egyptian Materials and Industries*, 3rd edition, London, 1948.

G. F. H. Smith, *Gemstones*, 13th edition, revised by F. C. Phillips, London, 1958.

Theophrastus, *De Lapidibus*, edited with Introduction, Translation and Commentary by D. E. Eichholz, Oxford, 1965.

L. Urlichs, *Chrestomathia Pliniana*, Berlin, 1857. (This includes the text with notes of N.H. XXXVI. 9–43, 64–125.)

E. H. Warmington, *The Commerce between the Roman Empire and India*, Cambridge, 1928.

Max Wellmann, 'Die Stein- und Gemmenbücher der

Antike,' *Quellen und Studien zur Geschichte der Naturwissenschaften und der Medizin*, iv, part 4 (1935), pp. 86 ff.

THE MANUSCRIPTS OF BOOKS XXXVI–XXXVII (CHIEFLY FROM MAYHOFF)

'Older' Manuscript

B codex Bambergensis, 10th century, ends at XXXVII. 205 (the end of the work).

Later Manuscripts

1st family

V codex Leidensis Vossianus, 11th century or earlier, ends at XXXVI. 97.

F codex Leidensis (Lipsii), 11th century, ends at XXXVII. 199.

R codex Florentinus Riccardianus, about A.D. 1100, ends at XXXVI. 157.

d codex Parisinus latinus 6797, 13th century, ends at XXXVII. 199 (XXXVII having been added in a second hand).

T codex Toletanus, 13th century, ends at XXXVI. 204.

h codex Parisinus 6801, 15th century, ends at XXXVII. 199.

2nd family

a codex Vindobonensis CCXXXIV, 12th or 13th century, ends at XXXVII. 203.

L codex Laurentianus plut. LXXXII. 1. 2 sive

Slaglosianus, early 13th century, ends at XXXVII. 199.

man. Dal. codex *a Dalecampio in margine citatus.*

cod. Poll. codex Monacensis Pollinganus, A.D. 1459, ends at XXXVII. 199.

Index. The index of subject-matter and authors in Book I of the *Historia Naturalis.*

PLINY:

NATURAL HISTORY

BOOK XXXVI

PLINII NATURALIS HISTORIAE

LIBER XXXVI

1 I. Lapidum natura restat, hoc est praecipua morum insania, etiam ut gemmae cum sucinis atque crystallinis murrinisque sileantur. omnia namque quae usque ad hoc volumen tractavimus hominum genita causa[1] videri possunt: montes natura sibi fecerat ut[2] quasdam compages telluris visceribus densandis, simul ad fluminum impetus domandos fluctusque frangendos ac minime quietas partes coercendas durissima sui materia. caedimus hos trahimusque nulla alia quam deliciarum causa, quos
2 transcendisse quoque mirum fuit. in portento prope maiores habuere Alpis ab Hannibale exsuperatas et postea a Cimbris: nunc ipsae caeduntur in mille genera marmorum. promunturia aperiuntur mari, et rerum natura agitur in planum; evehimus ea quae separandis gentibus pro terminis constituta erant, navesque marmorum causa fiunt, ac per

[1] genita causa BVR: causa genita dT.
[2] ut *Fröhner*: et *codd.*

[a] *murrina* seem generally to have been carved from fluor-spar, although in some cases large pieces of agate may have been used. See XXXVII. 21–22 and notes *ad loc.* The spelling of the word varies from passage to passage even in the same manuscript.

PLINY: NATURAL HISTORY

BOOK XXXVI

I. It remains for us to deal with the nature of stones *Stones*
or, in other words, the prime folly in our behaviour, to be considered as such even though no reference be made to gems, amber and vessels of rock-crystal and XXXVII. 23 ff.
fluor-spar.[a] For everything that we have investigated up to the present volume may be deemed to XXXVII. 21–22.
have been created for the benefit of mankind. Mountains, however, were made by Nature for herself to serve as a kind of framework for holding firmly together the inner parts of the earth, and at the same time to enable her to subdue the violence of rivers, to break the force of heavy seas and so to curb her most restless elements with the hardest material of which she is made. We quarry these mountains and haul them away for a mere whim; and yet there was a time when it seemed remarkable even to have succeeded in crossing them. Our forefathers considered the scaling of the Alps by Hannibal 218 B.C.
and later by the Cimbri to be almost unnatural. 101 B.C.
Now these selfsame Alps are quarried into marble of a thousand varieties.

Headlands are laid open to the sea, and nature is flattened. We remove the barriers created to serve as the boundaries of nations, and ships are built specially for marble. And so, over the waves of the

fluctus, saevissimam rerum naturae partem, huc illuc portantur iuga, maiore etiamnum venia[1] quam cum ad frigidos potus vas petitur in nubila caeloque
3 proximae rupes cavantur, ut bibatur glacie.[2] secum quisque cogitet, et quae[3] pretia horum audiat, quas vehi trahique moles videat, et quam sine iis multorum sit beatior vita.[4] ista facere, immo verius pati mortales quos ob usus quasve ad voluptates alias nisi ut inter maculas lapidum iaceant, ceu vero non tenebris noctium, dimidia parte vitae cuiusque, gaudia haec auferentibus!

4 II. Ingens ista reputantem subit etiam antiquitatis rubor. exstant censoriae leges Claudianae[5] in cenis glires[6] et alia dictu minora adponi vetantes: marmora invehi, maria huius rei causa transiri quae vetaret, lex
5 nulla lata est. dicat fortassis aliquis: non enim invehebantur. id quidem falso. CCCLX columnas M. Scauri aedilitate ad scaenam theatri temporari et vix mense uno futuri in usu viderunt portari silentio legum. sed publicis nimirum indulgentes volup-

[1] venia *codd.*: vesania *edd. vett.*
[2] glacie VRdh *Mayhoff*: glacies B.
[3] et quae B: quae VRd.
[4] vita *plerique codd.*: vita, ad quamque multorum neces sit necesse *edd. vett. cum cod.* h.
[5] Claudianae B: glandia *ceteri codd.*
[6] glires B: gliresque V²Rdh.

[a] That is, from rock-crystal. κρύσταλλος means both 'ice' and 'rock-crystal', and the latter was commonly supposed to be ice that had been subjected to excessive freezing: cf. XXXVII. 23, 26.

sea, Nature's wildest element, mountain ranges are transported to and fro, and even then with greater justification than we can find for climbing to the clouds in search of vessels to keep our drinks cool, and for hollowing out rocks that almost reach the heavens, so that we may drink from ice.[a] When we hear of the prices paid for these vessels, when we see the masses of marble that are being conveyed or hauled, we should each of us reflect, and at the same time think how much more happily many people live without them. That men should do such things, or rather endure them, for no purpose or pleasure except to lie amid spotted marbles, just as if these delights were not taken from us by the darkness of night, which is half our life's span!

II. When we think of these things we feel our- *Marble.*
selves blushing prodigiously with shame even for the men of former times. There exist the laws passed by Claudius in his censorship forbidding dormice and other trifles too insignificant to mention to be served at dinner.[b] But no law was ever passed forbidding us to import marble and to traverse the seas for its sake. Perhaps it may be said 'Of course not. No marbles were being imported.' That suggestion at least is untrue. In the aedileship of Marcus Scaurus there 58 B.C.
was the spectacle of 360 columns being taken to the stage of an improvised theatre that was intended to § 50, 113–115.
be used barely for a month, and the laws were silent. Of course, it was the official pleasures of the community for which some allowance was being

[b] If the reading of B is correct, the Claudius in question may have been Gaius Claudius Pulcher, who was censor in 169 B.C. At this period several sumptuary laws were passed.

tatibus. id ipsum cur? aut qua magis via inrepunt vitia quam publica? quo enim alio modo in privatos usus venere ebora, aurum, gemmae? aut quid
6 omnino diis reliquimus? verum esto, indulserint publicis voluptatibus. etiamne tacuerunt, maximas earum atque adeo duodequadragenum pedum Lucullei marmoris in atrio Scauri conlocari? nec clam id occulteque factum est. satisdare [1] sibi damni infecti coegit redemptor cloacarum, cum in Palatium eae traherentur. non ergo in tam malo exemplo moribus caveri [2] utilius fuerat? tacuere tantas moles in privatam domum trahi praeter fictilia deorum
7 fastigia! III. nec potest videri Scaurus rudi et huius mali inprovidae civitati obrepsisse quodam vitii [3] rudimento. iam L. Crassum oratorem illum, qui primus peregrini marmoris columnas habuit in eodem Palatio,[4] Hymettias tamen nec plures sex aut longiores duodenum pedum, M. Brutus in iurgiis ob
8 id Venerem Palatinam appellaverat. nimirum ista omisere moribus victis, frustraque interdicta quae

[1] satisdare B: satisdari VRdh.
[2] caveri B: cavere VRd.
[3] vitii BR: viti V: vitae *edd. vett.*
[4] Palatio B: atrio V²dTh, *edd. vett.*

[a] Blue-grey marble from Mt. Hymettus near Athens.

made by our laws. But why should this, of all excuses, have been made? Or what route is more commonly taken by vices in their surreptitious approach than the official one? How else have ivory, gold and precious stones come to be used in private life? Or what have we left entirely to the gods? Very well; some allowance was being made for the pleasures of the community. Were not the laws silent also when the largest of those columns, which were each fully 38 feet long and of Lucullean § 49.
marble, were placed in the hall of Scaurus' house? And there was no secrecy or concealment. A sewer contractor forced Scaurus to give him security against possible damage to the drains when the columns were being hauled to the Palatine. Would it not have been more expedient, therefore, when so harmful a precedent was being set, to afford some security for our morals? The laws were still silent when these great masses of marble were dragged to a private house past the earthenware pediments of temples! III. Nor can we suppose that Scaurus surprised with an elementary lesson in vice a community that was untutored and unable to foresee the consequences of the mischief. It was before this that during a quarrel the orator Lucius Crassus, *Consul in* 95 B.C.
having been the first to install, also on the Palatine, columns of foreign marble, columns which were after all merely of Hymettus marble [a] and not more than six in number or more than 12 feet each in length, was in consequence nicknamed by Marcus Brutus the Palatine Venus. Of course these matters were disregarded because morals had already lost the battle; and when it was seen that there was no

vetuerant cernentes nullas potius quam inritas esse
leges maluerunt. haec atque quae secuntur meliores
esse nos probabunt. quis enim hodie tantarum
columnarum atrium habet? sed priusquam de
marmoribus dicamus, hominum in iis praeferenda [1]
iudicamus pretia. ante igitur artifices percense-
bimus.

9 IV. Marmore scalpendo primi omnium inclaruerunt
Dipoenus et Scyllis,[2] geniti in Creta insula etiamnum
Medis imperantibus priusque quam Cyrus in Persis
regnare inciperet. hoc est Olympiade circiter
quinquagensima. hi Sicyonem se contulere, quae
diu fuit officinarum omnium talium patria. deorum
simulacra publice locaverant iis Sicyonii, quae
priusquam absolverentur, artifices iniuriam questi
10 abiere in Aetolos. protinus Sicyonem fames invasit
ac sterilitas maerorque dirus. remedium petentibus
Apollo Pythius respondit: si Dipoenus et Scyllis
deorum simulacra perfecissent. quod magnis merce-
dibus obsequiisque impetratum est. fuere autem
simulacra ea Apollinis, Dianae, Herculis, Minervae,
11 quod de [3] caelo postea tactum est. Cum hi essent,
iam fuerat in Chio insula Melas scalptor, dein filius
eius Micciades ac deinde nepos Archermus, cuius filii

[1] praeferenda BR *Mayhoff*: proferenda dh *Sillig*: praevertenda *coni. Mayhoff*.
[2] Scyllis B: Scylus VRd; *et similiter infra.*
[3] quod de *Urlichs*: quo de B[1]: quod e *aliquot codd.*

effective way of banning what had been expressly forbidden, it seemed preferable to have no laws at all rather than laws that were of no avail. These events and those that have followed them in our time will show that we are better men. For who nowadays possesses a hall equipped with such large columns? However, before we speak of marbles, I am of the opinion that we should display the merits of the men who have worked in this material. First, then, we shall make a survey of artists.

IV. The very first men to make a name as sculptors in marble were Dipoenus and Scyllis, who were born in the island of Crete while Media was still a great power and Cyrus had not yet come to the throne of Persia. Their date falls approximately in the 50th Olympiad. They made their way to Sicyon, which was for long the motherland of all such industries. The men of Sicyon had given them a contract in the name of the state for making statues of gods; but before these were finished the artists complained that they had been wronged and went away to Aetolia. Sicyon was instantly stricken with famine, barrenness and fearful affliction. When the people begged the oracle for relief, Apollo of Delphi replied that relief would come 'if Dipoenus and Scyllis completed the images of the gods.' This they were prevailed upon to do thanks to the payment of high fees and high compliments. The statues, incidentally, were those of Apollo, Diana, Hercules and Minerva, the last of which was later struck by lightning.

Marble statues. *580–577 B.C.*

Before the time of Dipoenus and Scyllis there had already lived in the island of Chios a sculptor Melas, who was succeeded by his son Micciades and his

The Chian school.

Bupalus et Athenis vel clarissimi in ea scientia fuere Hipponactis poetae aetate, quem certum est LX olympiade fuisse. quodsi quis horum familiam ad proavum usque retro agat, inveniat artis eius originem
12 cum olympiadum initio coepisse. Hipponacti notabilis foeditas voltus erat; quam ob rem imaginem eius lascivia iocorum [1] hi proposuere ridentium circulis, quod Hipponax indignatus destrinxit amaritudine [2] carminum in tantum, ut credatur aliquis ad laqueum eos conpulisse. quod falsum est. conplura enim in finitimis insulis simulacra postea fecere, sicut in Delo, quibus subiecerunt carmen non vitibus tantum censeri Chion, sed et operibus Archermi filiorum. ostendunt et Iasii Dianam manibus eorum
13 factam. in ipsa Chio narrata est operis eorum Dianae facies in sublimi posita, cuius voltum intrantes tristem, abeuntes exhilaratum putant. Romae eorum signa sunt in Palatina aede Apollinis in fastigio et omnibus fere [3] quae fecit divus Augustus. patris quoque eorum et Deli fuere opera et in Lesbo insula.
14 Dipoeni quidem Ambracia, Argos, Cleonae operibus refertae fuere.

Omnes autem candido tantum marmore usi sunt e

[1] iocorum Rh *Sillig*: iocosam *O. Jahn, Mayhoff*: locorum *ceteri codd.*

[2] amaritudine *ego*; *cf. Ovid. Tr. II, 563*: amaritudinem *codd.*

[3] omnibus fere *codd.*: operibus fori *coni. Mayhoff.*

grandson Archermus; and the sons of Archermus, named Bupalus and Athenis, were quite the most eminent masters of the art at the time of the poet Hipponax, who is known to have been alive in the 60th Olympiad. Now if we trace their lineage back 540–537 B.C.
to the time of their great-grandfather, we find that the beginnings of this art coincide in time with the 1st Olympiad. Hipponax had a notoriously ugly face; 776–773 B.C.
and because of this they made impudent jokes much to the amusement of the groups of companions to whom they exhibited his likeness. This angered Hipponax, who rebuked them so violently in his mordant lampoons that he is believed by some to have driven them to hang themselves. But this is untrue because later they made several statues in neighbouring islands, for example in Delos; and to their pedestals they attached verses to the effect that 'Chios is esteemed not merely for its vines, but also for the works of the sons of Archermus.' Moreover the people of Iasos proudly display a Diana made by them. In Chios itself there is stated to be a face of Diana which is their work. It is set in a lofty position, and people entering the building imagine that her expression is stern, but when they leave they fancy that it has become cheerful. At Rome there are statues by them on the angles of the pediment of the temple of Apollo on the Palatine and on almost all the buildings for which the emperor Augustus of Revered Memory was responsible. There were works by their father too at Delos and in the island of Lesbos. As for Dipoenus, Ambracia, Argos and Cleonae were full of his productions.

All these artists used only white marble from the *Parian marble.*

Paro insula, quem lapidem coepere lychniten
appellare, quoniam ad lucernas in cuniculis caede-
retur, ut auctor est Varro, multis postea candi-
dioribus repertis, nuper vero etiam in Lunensium
lapicidinis. sed in Pariorum mirabile proditur,
glaeba lapidis unius cuneis dividentium soluta,
imaginem Sileni intus extitisse.
15 Non omittendum hanc artem tanto vetustiorem
fuisse quam picturam aut statuariam, quarum
utraque cum Phidia coepit octogensima tertia olym-
piade, post annos circiter CCCXXXII. et ipsum Phidian
tradunt scalpsisse marmora, Veneremque eius esse
Romae in Octaviae operibus eximiae pulchritudinis.
16 Alcamenen Atheniensem, quod certum est, docuit in
primis nobilem, cuius sunt opera Athenis complura in
aedibus sacris praeclarumque Veneris extra muros,
quae appellatur Ἀφροδίτη ἐν κήποις. huic summam
17 manum ipse Phidias inposuisse dicitur. eiusdem[1]
discipulus fuit Agoracritus Parius, et aetate gratus,
itaque e suis operibus pleraque nomini eius donasse
fertur. certavere autem inter se ambo discipuli
Venere facienda, vicitque Alcamenes non opere, sed
civitatis suffragiis contra peregrinum suo faventis.
quare Agoracritus ea lege signum suum vendidisse

[1] eiusdem B: ipse *ceteri codd.*

[a] Although Parian marble was quarried under these conditions, *lychnites* should mean 'lamp-like,' a term which might well refer to the luminous quality of the surface of this marble.

[b] The main feature of these buildings, dedicated by Augustus to his sister, was a series of porticoes (XXXVI. 24, 34, 35) surrounding the temples of Jupiter Stator and Juno (XXXVI. 42). The buildings included a library, a *curia* (XXXVI. 28) and *scholae* (XXXVI. 22), that is, an assembly hall and lecture rooms.

island of Paros, a stone which they proceeded to call 'lychnites,' since, according to Varro, it was quarried in galleries by the light of oil lamps.[a] However, many whiter varieties have been discovered since their time, some indeed only recently, as is the case with the Luna quarries. As for the quarries of *Carrara marble.*
Paros, there is an extraordinary tradition that once, when the stone-breakers split a single block with their wedges, a likeness of Silenus was found inside.

We should not forget to mention that this art is much older than that of painting or of bronze statuary, both of which arose with Pheidias in the 83rd 448–445 B.C.
Olympiad, that is, about 332 years later. It is reported that Pheidias himself carved in marble and *Born c.* 500 B.C.
that the exceptionally beautiful Venus in Octavia's Buildings[b] at Rome is his. What is certain is that a pupil of his was the Athenian Alcamenes, a particularly famous sculptor, several of whose works are to be seen at Athens in the temples, while outside the walls there is the celebrated statue of Venus, which in Greek is known as Aphrodite of the Gardens. Pheidias himself is said to have put the finishing touches to this. Another of his pupils was Agoracritus of Paros, who pleased him, moreover, because of his youthful good looks, and consequently Pheidias is said to have allowed him to pass as the author of several of his own works. However that may be, the two pupils competed with each other in making a Venus, and Alcamenes won the contest, not indeed through his skill, but through the votes of his fellow-citizens, who supported their kinsman at the expense of his foreign rival. Consequently, Agoracritus is reported to have sold his statue under a proviso that

traditur, ne Athenis esset, et appellasse Nemesin. id positum est Rhamnunte pago Atticae, quod M. Varro omnibus signis praetulit. est et in Matris Magnae delubro eadem civitate Agoracriti opus.
18 Phidian clarissimum esse per omnes gentes quae Iovis Olympii famam intellegunt nemo dubitat, sed ut laudari merito sciant etiam qui opera eius non videre, proferemus argumenta parva et ingenii tantum. neque ad hoc Iovis Olympii pulchritudine utemur, non Minervae Athenis factae amplitudine, cum sit ea cubitorum xxvi—ebore haec et auro constat—sed in scuto eius Amazonum proelium caelavit intumescente ambitu, in[1] parmae eiusdem concava parte deorum et Gigantum dimicationes, in soleis vero Lapitharum et Centaurorum. adeo momenta
19 omnia capacia artis illi fuere. in basi autem quod caelatum est Πανδώρας γένεσιν appellant: dii adsunt nascenti[2] xx numero. Victoria praecipue mirabili, periti mirantur et serpentem ac[3] sub ipsa cuspide aeream sphingem. haec sint obiter dicta de artifice numquam satis laudato, simul ut noscatur illam magnificentiam aequalem fuisse et in parvis.
20 Praxitelis aetatem inter statuarios diximus, qui

[1] ambitu, in *Michaelis*: ambitum BV[2]: ambitu Rdh.

[2] adsunt nascenti *Urlichs, E. Sellers*: sunt nascentis R: sunt nascentes BVd, *Sillig*: sunt nascenti....s *Mayhoff, qui* faventes *vel* dona ferentes *excidisse suspicatur.*

[3] ac *transp. ante* sphingem *Urlichs, qui et legit* aureum (aeream *codd.*), *sed Plinium ipsum erravisse putat Sillig.*

---

[a] Indignation. A fragment of the head is in the British Museum.

[b] Reading uncertain.

[c] This figure of Nike was 6 feet high and stood on Athene's outstretched hand (Pausanias I. 24, 5).

it should not remain in Athens, and to have called it Nemesis.[a] It was set up within Attica in the deme of Rhamnus, and Marcus Varro preferred it to any other statue. In the same township there is also a work by Agoracritus in the shrine of the Great Mother. That Pheidias is the most famous sculptor *Pheidias.* among all peoples who appreciate the fame of his Olympian Jupiter is beyond doubt, but in order that even those who have not seen his works may be assured that his praises are well-earned I shall produce evidence that is insignificant in itself and sufficient only to prove his inventiveness. To do so, I shall not appeal to the beauty of his Olympian Jupiter or to the size of his Minerva at Athens, even though this statue, made of ivory and gold, is 26 cubits in height. But rather, I shall mention her shield, on the convex border of which he engraved a Battle of the Amazons, and on the hollow side Combats of Gods and Giants; and her sandals, on which he depicted Combats of Lapiths and Centaurs. So truly did every detail lend itself to his art. On the pedestal there is carved what is entitled in Greek the Birth of Pandora, with twenty gods assisting at the birth.[b] Although the figure of Victory[c] is especially remarkable, connoisseurs admire also the snake, as well as the bronze sphinx that crouches just beneath her spear. These are things which should be stated in passing with regard to an artist who has never been praised enough. At the same time, they make us realize that the grandeur of his notions was maintained even in small matters.

Praxiteles: flor. 364–361 B.C. (XXXIV. 69–70).

Praxiteles is an artist whose date I have mentioned among those of the makers of bronze statues, but in

marmoris gloria superavit etiam semet. opera eius sunt Athenis in Ceramico, sed ante omnia est non solum Praxitelis, verum in toto orbe terrarum Venus, quam ut viderent, multi navigaverunt Cnidum. duas fecerat simulque vendebat, alteram velata specie, quam ob id praetulerunt quorum condicio erat, Coi, cum [1] eodem pretio detulisset, severum id ac pudicum arbitrantes; reiectam Cnidii emerunt, inmensa
21 differentia famae. voluit eam [2] a Cnidiis postea mercari rex Nicomedes, totum aes alienum, quod erat ingens, civitatis dissoluturum se promittens. omnia perpeti maluere, nec inmerito; illo enim signo Praxiteles nobilitavit Cnidum. aedicula eius tota aperitur, ut conspici possit undique effigies deae,[3] favente ipsa, ut creditur, facta. nec minor ex quacumque parte admiratio est. ferunt amore captum quendam, cum delituisset noctu, simulacro cohaesisse, eiusque cupiditatis esse indicem maculam.
22 sunt in Cnido et alia signa marmorea inlustrium artificum, Liber pater Bryaxidis et alter Scopae et Minerva, nec maius aliud Veneris Praxiteliae specimen quam quod inter haec sola memoratur. eiusdem est et Cupido, obiectus a Cicerone Verri ille, propter

[1] cum *Sillig*: tum B: cum etiam VRd.
[2] eam Bd: etiam *ceteri codd.*
[3] deae VRdh *Mayhoff*: dea B *Sillig*.

the fame of his work in marble he surpassed even himself. There are works by him at Athens in the Cerameicus; and yet superior to anything not merely by Praxiteles, but in the whole world, is the Venus, which many people have sailed to Cnidus to see. He had made two figures, which he put up for sale together. One of them was draped and for this reason was preferred by the people of Cos, who had an option on the sale, although he offered it at the same price as the other. This they considered to be the only decent and dignified course of action. The statue which they refused was purchased by the people of Cnidus and achieved an immeasurably greater reputation. Later King Nicomedes was VII. 127.
anxious to buy it from them, promising so to discharge all the state's vast debts. The Cnidians, however, preferred to suffer anything but this, and rightly so; for with this statue Praxiteles made Cnidus a famous city. The shrine in which it stands is entirely open so as to allow the image of the goddess to be viewed from every side, and it is believed to have been made in this way with the blessing of the goddess herself. The statue is equally admirable from every angle. There is a story that a man once fell in love with it and hiding by night embraced it, and that a stain betrays this lustful act. In Cnidus there are also other marble figures by notable artists, a Father Liber by Bryaxis, a Father Liber and a § 30.
Minerva by Scopas; but there is no greater proof of § 25 ff.
the excellence of Praxiteles' Venus than the fact that amidst these works it alone receives mention. To Praxiteles belongs also a Cupid, with which Cicero taunted Verres, 'the famous Cupid for the

quem Thespiae visebantur, nunc in Octaviae scholis positus; eiusdem et alter nudus in Pario colonia Propontidis, par Veneri Cnidiae nobilitate et iniuria; adamavit enim Alcetas Rhodius atque in eo quoque
23 simile amoris vestigium reliquit. Romae Praxitelis opera sunt Flora, Triptolemus, Ceres in hortis Servilianis, Boni Eventus et Bonae Fortunae simulacra in Capitolio, item Maenades et quas Thyiadas vocant et Caryatidas, et Sileni in Pollionis Asini
24 monimentis et Apollo et Neptunus. Praxitelis filius Cephisodotus et artis heres fuit. cuius laudatum est Pergami symplegma[1] nobile digitis corpori verius quam marmori inpressis. Romae eius opera sunt Latona in Palatii delubro, Venus in Pollionis Asini monumentis et intra Octaviae porticus in Iunonis aede Aesculapius ac Diana.

25 Scopae laus cum his certat. is fecit Venerem et Pothon, qui Samothrace[2] sanctissimis caerimoniis coluntur, item Apollinem Palatinum, Vestam sedentem laudatam in Servilianis hortis duosque campteras

[1] symplegma *ed. Basiliensis (1525) e codd. Hermolai Barbari*: symplegam B[1]: symplega B[2]h.
[2] Samothrace *plerique codd.*: Samotrace B: Samothracae *coni. Mayhoff coll. XXXVII. 181.*

[a] Cic. *Verr.* IV. 2, 4; IV. 60, 135.
[b] *I.e.* Persephone. The Gardens of Servilius were on the road to Ostia.

sake of which men visited Thespiae,'[a] and which now stands in Octavia's Rooms. To him belongs, moreover, § 15.
another Cupid, which is naked, at Parium, the colony on the Sea of Marmara, a work that matches the Venus of Cnidus in its renown, as well as in the outrageous treatment which it suffered. For Alcetas, a man from Rhodes, fell in love with it and left upon it a similar mark of his passion. At Rome the works of Praxiteles are a Flora,[b] a Triptolemus and a Ceres in the Gardens of Servilius, images of Success and Good Fortune on the Capitol, and likewise the Maenads, the so-called Thyiads and Caryatids and the Sileni in the Collection of Asinius Pollio,[c] as well as an Apollo and a Neptune. The son of Praxiteles, Cephisodotus, inherited also his skill. His Persons Grappling at Pergamum is highly praised, being notable for the fingers, which seem genuinely to sink into living flesh rather than into dead marble. At Rome his works are the Latona in the temple of the Palatine Apollo, a Venus in the Collection of Asinius Pollio, and the Aesculapius and Diana in the temple of Juno within the Porticoes of Octavia.

These artists are rivalled in merit by Scopas. He *Scopas:* flor. 395–350 B.C.
made a Venus and a figure of Desire, which are worshipped with the most solemn rites in Samothrace. He was responsible also for the Apollo on the Palatine and the much praised Seated Vesta in the Gardens of Servilius, along with the two turning-posts[d] on either side of her, of which there are

[c] *Cf.* XXXVI. 33–34. The collection seems to have been housed in his *Bibliotheca*, the first public library to be established in Rome.
[d] Columns marking the turning-point in a stadium.

circa eam, quorum pares in Asini monimentis sunt,
26 ubi et canephoros eiusdem. sed in maxima digna-
tione delubro Cn. Domitii in circo Flaminio Neptunus
ipse et Thetis atque Achilles, Nereides supra delphi-
nos et cete aut hippocampos sedentes, item Tritones
chorusque Phorci et pistrices ac multa alia marina,
omnia eiusdem manu, praeclarum opus, etiam si
totius vitae fuisset. nunc vero praeter supra dicta
quaeque nescimus Mars etiamnum est sedens
colossiaeus eiusdem manu[1] in templo Bruti Callaeci
apud circum eundem, praeterea Venus in eodem loco
nuda, Praxiteliam illam antecedens et quemcumque
alium locum nobilitatura.

27 Romae quidem multitudo[2] operum et iam[3] obli-
teratio ac magis officiorum negotiorumque acervi
omnes a contemplatione tamen[4] abducunt, quoniam
otiosorum et in magno loci silentio talis admiratio est.
qua de causa ignoratur artifex eius quoque Veneris
quam Vespasianus imperator in operibus Pacis suae
28 dicavit antiquorum dignam fama. par haesitatio est

[1] manu *Ianus*: manci B: *om. ceteri codd.*
[2] multitudo B: magnitudo *plerique codd.*
[3] et iam *Mayhoff*: etiam *codd.*
[4] tamen B: tali RdTh: talium *edd. vett.*

---

[a] It is uncertain which Domitius built this temple.

[b] To whom the temple was dedicated.

[c] Sea-gods; *cf.* Virgil *Aen.* V. 240.

[d] Possibly 'there still exists,' but *etiamnum* meaning 'moreover' is not unusual in Pliny (*cf.* § 137, *alius etiamnum pyrites*) and suits the present context.

[e] This Brutus celebrated a triumph over the Callaeci (of Galicia in Spain) in 132 B.C.

facsimiles in the Collection of Asinius, where there is also his Girl Carrying a Sacred Basket. But most highly esteemed is his composition in the shrine built by Cn. Domitius[a] in the Flaminian Circus. There is Neptune himself,[b] and with him are Thetis and Achilles. There are Nereids riding on dolphins and mighty fish or on sea-horses, and also Tritons, 'Phorcus' band,'[c] swordfish and a host of other sea creatures, all by the hand of the one man, a magnificent achievement even if it had occupied his whole career. As it is, apart from the works mentioned above and those unknown to us, there is furthermore[d] the colossal seated statue of Mars by the same artist in the temple built by Brutus Callaecus,[e] also in the Circus, as well as his naked Venus in the same place, a work that surpasses the Venus of Praxiteles and would have brought fame to any locality but Rome.

At Rome, indeed, the great number of works of art and again their consequent effacement[f] from our memory, and, even more, the multitude of official functions and business activities must, after all,[g] deter anyone from serious study, since the appreciation involved needs leisure and deep silence in our surroundings. Hence we do not know the maker even
of the Venus dedicated by the emperor Vespasian A.D. 69-79.
in the precincts of his temple of Peace, although it § 102.
deserves to rank with the old masters. Equally there is doubt as to whether the Dying Children of Niobe

[f] *Obliteratio* could mean 'defacement,' *e.g.*, of inscriptions, but cf. XXXIV, 47 (*obliteratio*) and XXXVI, 42 (*obliterari*).

[g] The idea latent in *tamen* is '(Study is impossible) *in spite of* the beauties of the works which have just been mentioned and which clearly deserve such study.'

in templo Apollinis Sosiani, Niobae liberos morientes Scopas an Praxiteles fecerit; item Ianus pater, in suo templo dicatus ab Augusto ex Aegypto advectus, utrius manu[1] sit, iam quidem et auro occultatus. similiter in curia Octaviae quaeritur de Cupidine fulmen tenente; id demum adfirmatur, Alcibiaden

29 esse, principem forma in ea aetate. multa in eadem schola sine auctoribus placent: Satyri quattuor, ex quibus unus Liberum patrem palla velatum umeris[2] praefert, alter Liberam similiter, tertius ploratum infantis cohibet, quartus cratere alterius sitim sedat, duaeque Aurae velificantes sua veste. nec minor quaestio est in Saeptis, Olympum et Pana, Chironem cum Achille qui fecerint, praesertim cum capitali satisdatione fama iudicet dignos.

30 Scopas habuit aemulos eadem aetate Bryaxim et Timotheum et Leocharen, de quibus simul dicendum est, quoniam pariter caelavere Mausoleum. sepulchrum hoc est ab uxore Artemisia factum Mausolo, Cariae regulo, qui obiit olympiadis CVII anno secundo.

[1] manu VRh: manus Bd.
[2] umeris *Ianus, Mayhoff, E. Sellers*: umeri B: ueneris VRdTh: ulnis *Sillig*.

---

[a] The Apollo brought from Seleuceia in Syria by C. Sosius, who in 38 B.C. was Antony's legate in Syria.
[b] Probably a Hermes.
[c] This is most improbable.
[d] Libera, the sister of Liber, was usually identified with Persephone, but in this instance was probably taken to be Ariadne. The figure was no doubt that of a Maenad.
[e] Lit. pronounces them worth the pledging of one's life; cf. XXXIV. 38.
[f] 352–349 B.C., but Mausolus died in 353 B.C., not in 351 B.C.

in the temple of the Sosian Apollo[a] was the work of Scopas or of Praxiteles. Similarly, we cannot tell which of the two carved the Father Janus[b] which was dedicated in its rightful temple by Augustus after being brought here from Egypt; and now a covering of gilt has hidden its secret still more. Equally, there is a controversy about the Cupid Holding a Thunderbolt in the Hall of Octavia. Only one thing § 15.
is stated with conviction, namely that the figure is that of Alcibiades,[c] the most handsome youth of that time. In the same salon there are many pleasing works of which the authors are unknown, for example, the Four Satyrs, of whom one is carrying on his shoulders Father Liber dressed in a robe and another is likewise carrying Ariadne,[d] while a third stops a child crying and a fourth gives a drink to another child out of a mixing-bowl; and the Two Breezes, who are spreading their cloaks like sails. There is just as much dispute as to the makers of the Olympus and Pan and the Chiron With Achilles in the Voting Enclosure, even though their fame pronounces them to be so valuable that their keepers must answer for their safety with their lives.[e]

Contemporaries of Scopas.

The contemporaries and rivals of Scopas were Bryaxis, Timotheus and Leochares, whom we must discuss along with him because together with him they worked on the carvings of the Mausoleum.

The Mausoleum.

This is the tomb that was built by Artemisia for her husband Mausolus, the viceroy of Caria, who died in the second year of the 107th Olympiad.[f] These

which was, however, the date of Artemisia's death. His status was that of satrap in the service of the king of Persia: hence *regulus*.

opus id ut esset inter septem miracula, hi maxime fecere artifices. patet ab austro et septentrione sexagenos ternos[1] pedes, brevius a frontibus, toto circumitu pedes ccccxxxx, attollitur in altitudinem xxv[2] cubitis, cingitur columnis xxxvi. pteron voca-
31 vere circumitum. ab oriente caelavit Scopas, a septentrione Bryaxis, a meridie Timotheus, ab occasu Leochares, priusque quam peragerent, regina[3] obiit. non tamen recesserunt nisi absoluto, iam id gloriae ipsorum artisque monimentum iudicantes; hodieque certant manus. accessit et quintus artifex. namque supra pteron pyramis altitudinem[4] inferiorem aequat, viginti quattuor gradibus in metae cacumen se contrahens; in summo est quadriga marmorea, quam fecit Pythis. haec adiecta cxxxx pedum
32 altitudine totum opus includit. Timothei manu Diana Romae est in Palatio Apollinis delubro, cui signo caput reposuit Avianius Evander.

In magna admiratione est Hercules Menestrati et

[1] sexagenos ternos *codd.*: CXXS *vel* CXXI *vel* CXIII (*pro* LXIII) *coni. Mayhoff.*

[2] XXV *cod.* B *Sillig, Mayhoff*: XXXX *Urlichs*: XXXV *Detlefsen. An* XXXXV?

[3] regina *plerique codd.*: regina artemisia quae mariti memoriae id opus exstrui iusserat *cod.* h, *edd. vett.*

[4] altitudinem *O. Jahn*: altitudine *codd.*

---

[a] The figure is far too small. The length over the stylobate is 127 feet, and the width 108 feet. Hence one of Mayhoff's conjectures may be right. On the other hand Pliny may have halved the correct length, thinking that it had to be divided between the two sides.

[b] Again the figure is too small. Pliny is presumably giving the height of the pteron, that is, half the total height of the building (see § 31). If, as seems likely, Pliny's figure of 140 feet for the total height is more or less correct (see p. 25,

artists were chiefly responsible for making the structure one of the seven wonders of the world. On the north and south sides it extends for 63 feet,[a] but the length of the façades is less, the total length of the façades and sides being 440 feet. The building rises to a height of 25 cubits[b] and is enclosed by 36 columns. The Greek word for the surrounding colonnade is 'pteron,' 'a wing.' The east side was carved by Scopas, the north by Bryaxis, the south by Timotheus and the west by Leochares; and before they completed their task, the queen died. However, they refused to abandon the work without finishing it, since they were already of the opinion that it would be a memorial to their own glory and that of their profession; and even to-day they are considered to rival each other in skill. With them was associated a fifth artist. For above the colonnade there is a pyramid as high again as the lower structure and tapering in 24 stages to the top of its peak. At the summit there is a four-horse chariot of marble, and this was made by Pythis. The addition of this chariot rounds off the whole work and brings it to a height of 140 feet.[c] There is a Diana by Timotheus at Rome in the temple of the Palatine Apollo, a statue for which a head was made as a replacement by Avianius Evander. Hor. *Sat. I.* 3, 90–1.

The Hercules of Menestratus is greatly admired, and so too is the Hecate in the precinct behind the

n. [c]), the height of the pteron would have been about 45 cubits, so that for XXV the correct reading may be XXXXV.

[c] This figure may be approximately correct. T. Fyfe and R. E. Wycherley (*Oxford Classical Dictionary* s.v. Mausoleum) suggest that the height was about 134 feet.

Hecate Ephesi in templo Dianae post aedem, in cuius contemplatione admonent aeditui parcere oculis; tanta marmoris radiatio est. non postferuntur et Charites in propylo Atheniensium, quas Socrates fecit, alius ille quam pictor, idem ut aliqui putant.[1] nam Myronis illius, qui in aere laudatur, anus ebria est Zmyrnae in primis incluta.

33 Pollio Asinius, ut fuit acris vehementiae, sic quoque spectari monumenta sua voluit. in iis sunt Centauri Nymphas gerentes Arcesilae, Thespiades Cleomenis, Oceanus et Iuppiter Heniochi,[2] Appiades Stephani, Hermerotes Taurisci, non caelatoris illius,
34 sed Tralliani, Iuppiter hospitalis Papyli, Praxitelis[3] discipuli, Zethus et Amphion ac Dirce et taurus vinculumque ex eodem lapide, a Rhodo advecta opera Apollonii et Taurisci. parentum hi certamen de se fecere, Menecraten videri professi, sed esse naturalem Artemidorum. eodem loco Liber pater Eutychidis laudatur, ad Octaviae vero porticum Apollo Philisci Rhodii in delubro suo, item Latona et
35 Diana et Musae novem et alter Apollo nudus. eum qui citharam in eodem templo tenet Timarchides

[1] non postferuntur . . . putant *in parenthesi Mayhoff.*
[2] Heniochi *Ianus*: eniochi B.
[3] Praxitelis: fraxitelis B: praxiteli Vd: Pasitelis *coni. Urlichs.*

[a] Lit. 'of Thespiae', a town not far from Helicon.
[b] More probably, 'terminal busts of Eros.'
[c] Probably identical with the Farnese Bull, and, like the Laocoon (§ 37), carved from several blocks of stone.

temple of Diana at Ephesus. In studying this statue people are warned by the sacristans to be careful of their eyes; so intense is the glare of the marble. As highly esteemed, too, are the Graces in the Propylaeum at Athens. These were the work of Socrates, who was not the same man as Socrates the xxxv. 137.
painter, although some think that he was. As for the famous Myron, who is so highly praised for his xxxiv. 57.
bronzes, his Tipsy Old Woman at Smyrna is especially renowned.

Asinius Pollio, being an ardent enthusiast, was accordingly anxious for his collection to attract § 23.
sightseers. In it are the Centaurs Carrying Nymphs by Arcesilas, the Muses of Helicon[a] by § 41.
Cleomenes, the Oceanus and Jupiter by Heniochus, the Nymphs of the Appian Water by Stephanus, the double busts of Hermes and Eros[b] by Tauriscus (not the well-known worker in metal and ivory, but a native of Tralles), xxxiii. 156.
the Jupiter Patron of Strangers by Papylus, the pupil of Praxiteles, and a composition by Apollonius and Tauriscus which was brought from Rhodes, namely Zethus and Amphion, and then Dirce and the bull with its rope, all carved from the same block of stone.[c] These two artists caused a dispute as to their parentage, declaring that their putative father was Menecrates and their real father Artemidorus. In the same galleries there is a Father Liber by Eutychides which is warmly praised, and close by the Portico of Octavia an Apollo by Philiscus of Rhodes standing in the temple of Apollo, and furthermore a Latona, a Diana, the Nine Muses, and another Apollo, which is naked. The Apollo With His Lyre in the same temple was made by Timarchides, and

fecit, intra Octaviae vero porticus aedem Iunonis
ipsam deam Dionysius et Polycles aliam, Venerem
eodem loco Philiscus, cetera signa Praxiteles.[1] iidem
Polycles et Dionysius, Timarchidis filii, Iovem, qui
est in proxima aede, fecerunt, Pana et Olympum
luctantes eodem loco Heliodorus, quod est alterum in
terris symplegma nobile, Venerem lavantem sese [2]
36 Daedalsas, stantem Polycharmus. ex honore ap-
paret in magna auctoritate habitum Lysiae opus
quod in Palatio super arcum divus Augustus honori
Octavi patris sui dicavit in aedicula columnis ador-
nata, id est quadriga currusque et Apollo ac Diana
ex uno lapide. in hortis Servilianis reperio laudatos
Calamidis Apollinem illius caelatoris, Dercylidis
pyctas, Amphistrati Callisthenen historiarum scrip-
37 torem. nec deinde multo plurium fama est, quo-
rundam claritati in operibus eximiis obstante numero
artificum, quoniam nec unus occupat gloriam nec
plures pariter nuncupari possunt, sicut in Laocoonte,
qui est in Titi imperatoris domo, opus omnibus et
picturae et statuariae artis praeferendum. ex uno
lapide eum ac liberos draconumque mirabiles nexus

[1] Praxiteles BVRh *Sillig, Mayhoff*: Pasiteles dT *Urlichs, Detlefsen, E. Sellers; an recte?*

[2] sese Daedalsas B *Mayhoff*: sese dedalsa VRd: se sed et aliam *Sillig*.

---

[a] The reading is uncertain, but the name may be Bithynian. A well-known Bithynian chieftain was named Doedalsus (E. R. Bevan, *the House of Seleucus*, vol. I, pp. 81–82).

[b] A pupil of Aristotle, who accompanied Alexander to Asia and wrote a history of his campaigns. He was executed on a charge of treason in 327 B.C.

[c] Possibly 'cannot be named at the same time.'

in the temple of Juno that stands within the Portico § 43.
of Octavia the image of the goddess herself was made
by Dionysius, although there is another by Polycles,
while the Venus in the same place was executed by
Philiscus and the other statues by Praxiteles.
Polycles and Dionysius, who were the sons of Tim-
archides, were responsible also for the Jupiter in the § 43.
adjacent temple, while in the same place the Pan
and Olympus Wrestling, which is the second most
famous grappling group in the world, was the work of § 24.
Heliodorus, the Venus Bathing of Daedalsas,[a] and
the Venus Standing of Polycharmus. It is clear
from the honour accorded to it that a work much
esteemed was that of Lysias which Augustus of
Revered Memory dedicated in honour of his father
Octavius in a niche embellished with columns upon
the arch on the Palatine. This work consists of a
team of four horses with a chariot and Apollo with
Diana all carved from one block of marble. In the
Gardens of Servilius I find that works much admired § 23.
are the Apollo by the eminent engraver Calamis, the XXXIII. 156.
Boxers by Dercylides, and the historian Callisthenes [b]
by Amphistratus. Beyond these men, there are not
a great many more that are famous. The reputation
of some, distinguished though their work may be,
has been obscured by the number of artists engaged
with them on a single task, because no individual
monopolizes the credit nor again can several of them
be named on equal terms.[c] This is the case with the
Laocoon in the palace of General Titus, a work
superior to any painting and any bronze.[d] Laocoon,
his children and the wonderful clasping coils of the

[d] Discovered in 1506, and now in the Vatican.

de consilii sententia fecere summi artifices Hage-
38 sander et Polydorus et Athenodorus Rhodii. similiter Palatinas domos Caesarum replevere probatissimis signis Craterus cum Pythodoro, Polydeuces cum Hermolao, Pythodorus alius cum Artemone, at[1] singularis Aphrodisius Trallianus. Agrippae Pantheum decoravit Diogenes Atheniensis; in columnis templi eius Caryatides probantur inter pauca operum, sicut in fastigio posita signa, sed
39 propter altitudinem loci minus celebrata.[2] inhonorus est nec in templo ullo Hercules, ad quem Poeni omnibus annis humana sacrificaverant victima, humi stans ante aditum porticus ad nationes. sitae fuere et Thespiades ad aedem Felicitatis, quarum unam amavit eques Romanus Iunius Pisciculus, ut tradit Varro, admirator et Pasitelis, qui et quinque volumina scripsit nobilium operum in toto orbe.
40 natus hic in Graeca Italiae ora et civitate Romana donatus cum iis oppidis, Iovem fecit eboreum in Metelli aede, qua campus petitur. accidit ei, cum in navalibus, ubi ferae Africanae erant, per caveam intuens leonem caelaret, ut ex alia cavea

[1] at *Mayhoff*: et *codd.*
[2] similiter . . . celebrata *transp. post* scriptorem (§ 36) *Urlichs.*

---

[a] It is composed of five blocks.
[b] *I.e.*, Melkart.
[c] Built by Augustus, it contained statues representing all the nations.
[d] A contemporary of Pompey (XXXIII. 156).

snakes were carved from a single block[a] in accordance with an agreed plan by those eminent craftsmen Hagesander, Polydorus and Athenodorus, all of Rhodes. Similarly, the imperial mansions on the Palatine were filled with excellent statues made by pairs of artists, Craterus and Pythodorus, Polydeuces and Hermolaus, another Pythodorus and Artemon, and individually by Aphrodisius of Tralles. The Pantheon of Agrippa was embellished by Diogenes of Athens; and among the supporting members of this temple there are Caryatids that are almost in a class of their own, and the same is true of the figures on the angles of the pediment, which are, however, not so well known because of their lofty position. A work that is without honour and stands in no temple is the Hercules[b] before which the Carthaginians were wont to perform human sacrifices every year. This stands at ground-level in front of the entrance to the Portico of the Nations.[c] Formerly too there were statues of the Muses of Helicon by the temple of Prosperity, and a Roman knight, Junius Pisciculus, fell in love with one of them, according to Varro, who incidentally was an admirer of Pasiteles,[d] a sculptor who was also the author of a treatise in five volumes on the World's Famous Masterpieces. He was a native of Magna Graecia and received Roman citizenship along with the communities of that region. The
ivory Jupiter in the temple of Metellus at the ap- § 43.
proaches to the Campus Martius is his work. Once, he was at the docks, where there were wild beasts from Africa, and was making a relief of a lion, peering as he did so into the cage at his model, when it so happened that a leopard broke out of another cage

panthera erumperet, non levi periculo diligentissimi
artificis. fecisse opera complura dicitur; quae
41 fecerit, nominatim non refertur. Arcesilaum quoque
magnificat Varro, cuius se marmoream habuisse
leaenam aligerosque ludentes cum ea Cupidines,
quorum alii religatam tenerent, alii cornu cogerent
bibere, alii calciarent soccis, omnes ex uno lapide.
idem et a Coponio quattuordecim nationes, quae
42 sunt circa Pompeium,[1] factas auctor est. Invenio et
Canachum laudatum inter statuarios fecisse marmorea.
nec Sauram atque Batrachum obliterari
convenit, qui fecere templa Octaviae porticibus
inclusa, natione ipsi Lacones. quidam et opibus
praepotentes fuisse eos putant ac sua inpensa construxisse,
inscriptionem sperantes, qua negata hoc
tamen alio modo usurpasse. sunt certe etiam nunc
in columnarum spiris inscalptae nominum eorum
43 argumento lacerta atque rana. in Iovis aede ex iis
pictura cultusque reliquus omnis femineis argumentis
constat; erat enim facta Iunoni, sed, cum inferrentur
signa, permutasse geruli traduntur, et id[2] religione

[1] Pompeium VRdh: Pompei theatrum *Brotier*.
[2] id *om.* B *Sillig*.

[a] These statues may have stood within the theatre, or else in the portico that adjoined the stage. This portico is not to be confused with Augustus' *porticus ad nationes* (XXXVI. 39). The theatre, the first permanent theatre in Rome, was completed in 55 B.C. and stood in the Campus Martius.
[b] σαύρα, a lizard, and βάτραχος, a frog.

and caused serious danger to this most conscientious of artists. He is said to have executed a number of works, but their titles are not recorded. Arcesilaus XXXV. 155.
too is highly praised by Varro, who states that he once possessed a work of his, namely Winged Cupids Playing with a Lioness, of whom some were holding it with cords, some were making it drink from a horn, and some were putting slippers on its feet, all the figures having been carved from one block. Varro relates also that it was Coponius who was responsible for the fourteen figures of the Nations that stand around Pompey's theatre.[a] I find that Canachus, XXXIV. 50, 75.
who was much admired as a maker of bronzes, also executed figures in marble. Nor should we forget Sauras and Batrachus, who built the temples that are enclosed by the Porticoes of Octavia. They were mere natives of Sparta. And yet, some people actually suppose that they were very rich and erected the temples at their own expense because they hoped to be honoured by an inscription; and the story is that, although this was refused, they attained their object in another way. At any rate, on the moulded bases of the columns there are still in existence carvings of a lizard and a frog in token of their names.[b] One of these temples is that of Jupiter, in which the subjects of the paintings and of all the other embellishments are concerned with women. For it had been intended as the temple of Juno; but, according to the tradition, the porters interchanged the cult-images when they were installing them, and this arrangement was preserved as a matter of religious scruple, in the belief that the gods themselves had allotted their dwelling-places in this way. Similarly, therefore,

custoditum, velut ipsis diis sedem ita partitis. ergo et in Iunonis aede cultus est qui Iovis esse debuit.

Sunt et in parvolis marmoreis famam consecuti Myrmecides, cuius quadrigam cum agitatore operuit alis musca, et Callicrates, cuius formicarum pedes atque alia membra pervidere non est.

44 V. Haec sint dicta de marmoris scalptoribus summaque claritate artificum, quo in tractatu subit mentem non fuisse tum auctoritatem maculoso marmori. fecere et e Thasio, Cycladum insularum aemulo,[1] et e Lesbio; lividius hoc paulo. versicolores quidem maculas et in totum marmorum apparatum etiam Menander, diligentissimus luxuriae interpres,
45 primus et raro attigit. columnis demum utebantur in templis, nec lautitiae causa—nondum enim ista intellegebantur—sed quia firmiores aliter statui non poterant. sic est inchoatum Athenis templum Iovis Olympii, ex quo Sulla Capitolinis aedibus advexerat columnas. fuit tamen inter lapidem atque marmor
46 differentia iam et apud Homerum; dicit enim marmoreo saxo percussum, sed hactenus, regias

[1] aemulo *ego*: aeque BVRd *Sillig*: una aeque h: aequo *Mayhoff*.

[a] The temples were built by Q. Caecilius Metellus Macedonicus after his triumph in 146 B.C.

[b] Presumably, this was done as an experiment.

[c] In particular, Parian marble (XXXVI. 14).

[d] In particular, that of Jupiter, which had been burnt down in 83 B.C. Sulla arranged for its reconstruction, but the

the embellishments in the temple of Juno are those that were destined for the temple of Jupiter.[a]

Fame has been won in the making also of marble miniatures, namely by Myrmecides, whose Four-horse Chariot and Driver were covered by the wings of a fly,[b] and by Callicratides, whose ants have feet and other parts too small to be discerned.

White marble and marble with markings.

V. So much for the sculptors in marble and the artists who have achieved the greatest fame. In discussing this subject, however, I am reminded that in those times no value was attached to marble with markings. Apart from the marble of the Cyclades,[c] sculptors worked in that of Thasos, which rivals it, and of Lesbos, which has a slightly more bluish tinge. Markings of various colours and decorations of marble in general are first mentioned by that most accurate exponent of the details of high living, Menander, and even he rarely alludes to them. *c. 342–290 B.C.* Marble columns were certainly used in temples, not, however, as an embellishment, since embellishments as such were not yet appreciated, but merely because there was no way of erecting stronger columns. Thus they are a feature of the unfinished temple of Jupiter Olympius at Athens, from which Sulla brought columns to be used for temples on the Capitol.[d] However, ordinary stone and marble were distinguished already in Homer,[e] for he speaks of a man being struck by a piece of marble; but this is as far as he goes. He decorates even his royal palaces, how-

greater part of the work was carried out by Catulus, who does not seem to have used these pillars.

[e] But μάρμαρος in Homer (*Il.* XII. 380, XVI. 735; *Od.* IX. 499) seems to mean no more than a shining stone.

quoque domus, cum lautissime, praeter aes, aurum, electrum, argentum ebore tantum adornans. primum, ut arbitror, versicolores istas maculas Chiorum lapicidinae ostenderunt, cum exstruerent muros, faceto in id M. Ciceronis sale—omnibus enim ostentabant ut magnificum:—multo, inquit, magis mirarer, si Tiburtino lapide fecissetis. et, Hercules, non fuisset picturis honos ullus, non modo tantus, aliqua marmorum auctoritate.

47 VI. Secandi in crustas nescio an Cariae fuerit inventum. antiquissima, quod equidem inveniam, Halicarnasi domus Mausoli Proconnesio marmore exculta est latericiis parietibus. is obiit olympiadis CVII [1] anno secundo, urbis Romae CDIII.[2]

48 VII. Primum Romae parietes crusta marmoris operuisse totos domus suae in Caelio monte Cornelius Nepos tradit Mamurram, Formiis natum equitem Romanum, praefectum fabrum C. Caesaris in Gallia, ne quid indignitati desit, tali auctore inventa re. hic namque est Mamurra Catulli Veroniensis carminibus proscissus, quem, ut res est, domus ipsius

[1] CVII *cod.* B²: CVI *cod.* T: cui VR: C *Gelen, Brotier.*
[2] CDIII *cod.* B (CCCCIII *cod.* V): CCCLXXV *Brotier.*

[a] *Electrum* here refers not to amber, but to an alloy of gold and silver.
[b] Chian marble occurs in a wide range of colours. Grey and red are common, and the stone is often delicately veined.
[c] Travertine, a yellowish-white calcareous tufa (§ 167) from Tivoli, near Rome.
[d] A white marble, used also in St. Sophia at Istanbul.

ever sumptuously, only with ivory, apart from metals—bronze, gold, electrum[a] and silver. In my opinion, the first specimens of our favourite marbles with their parti-coloured markings appeared from the quarries of Chios when the people of that island were building their walls.[b] Hence the witty remark made at the expense of this work by Cicero. It was their practice to show it as a splendid structure to all their visitors; and his remark to them was 'I should be much more amazed if you had made it of stone from Tibur.'[c] And, heaven knows, painting would not have been valued at all, let alone so highly, had marbles enjoyed any considerable prestige.

Chian marble.

VI. The art of cutting marble into thin slabs may possibly have been invented in Caria. The earliest instance, so far as I can discover, is that of the palace of Mausolus at Halicarnassus, the brick walls of which were decorated with marble from the island of Marmara.[d] He died in the second year of the 107th Olympiad[e] and in the 403rd year after the founding of Rome. § 30.

Marble veneer.

VII. The first man in Rome to cover with marble veneer whole walls in his house, which was on the Caelian Hill, was, according to Cornelius Nepos,[f] Mamurra, a Roman Knight and a native of Formiae, who was Gaius (Julius) Caesar's chief engineer in Gaul. That such a man should have sponsored the invention is enough to make it utterly improper. For this is the Mamurra who was reviled by Catullus of Verona in his poems, the Mamurra whose house, as a matter of fact, proclaims more clearly than Catullus

[e] The date is incorrect: see p. 22, n. *f*.
[f] The historian, who was a friend of Cicero and Atticus.

clarius quam Catullus dixit habere quidquid habuisset Comata Gallia. namque adicit idem Nepos primum totis aedibus nullam nisi e marmore columnam habuisse et omnes solidas e Carystio aut Luniensi

49 VIII. M. Lepidus Q. Catuli in consulatu conlega primus omnium limina ex Numidico marmore in domo posuit magna [1] reprensione. is fuit consul anno urbis DCLXXVI.[2] hoc primum invecti Numidici marmoris vestigium invenio, non in columnis tamen crustisve, ut supra Carystii, sed in massa ac vilissimo liminum usu. post hunc Lepidum quadriennio L. Lucullus consul fuit, qui nomen, ut ex re apparet, Luculleo marmori dedit, admodum delectatus illo, primusque Romam invexit, atrum alioqui, cum

50 cetera maculis aut coloribus commendentur. nascitur autem in Chio [3] insula, solumque paene hoc marmor ab amatore nomen accepit. inter hos primum, ut arbitror, marmoreos parietes habuit scaena M. Scauri, non facile dixerim secto an solidis glaebis polito, sicuti est hodie Iovis Tonantis aedis in Capitolio. nondum enim secti marmoris vestigia invenio in Italia.

[1] magna *plerique codd.*: magnam B[1]: magna cum *coni. Mayhoff.*
[2] DCLXXVI dT *cod. Poll.*: DCLXVI BVRh.
[3] Chio *Hardouin*: heo B: Melo *Sillig, Mayhoff*: millo *aut* nilo *aut* ilo *ceteri codd.*

[a] Pliny is paraphrasing Catullus XXIX. 3–4.

himself that he 'possesses all that Shaggy Gaul possessed.' [a] Incidentally Nepos adds also that he was the first to have only marble columns in his whole house and that these were all solid columns of Carystus or Luna marble. VIII. Marcus Lepidus, *Cipollino and Carrara marble.* who was consul with Quintus Catulus, was the very first to lay down door-sills of Numidian marble in his house; [b] and for this he was sharply criticized. He was consul in the 676th year after the founding of the 78 B.C. city. This is the first indication that I can find of the importing of Numidian marble. The marble, however, was not in the form of columns or slabs, like that of Carystus mentioned above, but came in blocks to be used in the most sordid manner—as door-sills! Four years after the consulship of this Lepidus came that of Lucius Lucullus, who gave his name, as is 74 B.C. evident from the facts, to Lucullean marble. He took a great delight in this marble and introduced it to Rome, although it is in general black and all other marbles are favoured because of their markings or colours. It is found in the island of Chios [c] and is almost the only marble to have derived its name from that of a devotee. Of these men, it was Marcus Scaurus, in my opinion, whose stage was the first § 5. structure to have marble walls, though I am not prepared to say whether these were of veneer or of solid polished blocks, as, for instance, is the case to-day with the walls of the temple of Jupiter the Thunderer on the Capitol. For I find no evidence of marble veneer in Italy that is as early as this.

[b] A yellow marble with red veins quarried at Simitthus (Henschir Schemtu) in W. Tunisia.
[c] Reading uncertain.

51 IX. Sed quisquis primus [1] invenit secare luxuriam-
que [2] dividere, inportuni ingenii fuit. harena hoc [3]
fit et ferro videtur fieri, serra in praetenui linea pre-
mente harenas versandoque tractu ipso secante.
Aethiopica haec maxime probatur, nam id quoque
accessit, ut ab Aethiopia usque peteretur quod
secaret [4] marmora, immo vero etiam in Indos, quo
margaritas quoque peti severis moribus indignum
52 erat. haec proxime laudatur; mollior tamen quae
Aethiopica. illa nulla scabritie secat, Indica non
aeque levat, sed combusta ea polientes marmora
fricare iubentur. simile et Naxiae vitium est et
Coptitidi, quae vocatur Aegyptia. haec fuere anti-
qua genera marmoribus secandis. postea reperta
est non minus probanda ex quodam Hadriatici maris
53 vado, aestu nudante, observatione non facili. iam
quidem quacumque harena secare e fluviis omnibus
fraus artificum ausa est, quod dispendium admodum
pauci intellegunt. crassior enim harena laxioribus
segmentis terit et plus erodit marmoris maiusque
opus scabritia politurae relinquit; ita sectae attenu-

[1] primus BR *cod. Poll.*: primum dh *edd. vett.*
[2] luxuriamque *codd.*, *Sillig*: luxuriaque *J. Müller*, *Mayhoff*: luxuriaeque *coni. Mayhoff.*
[3] hoc Rdh: non B.
[4] secaret *Pintianus*, *Mayhoff*: faceret *codd.*, *edd. vett.*, *Sillig.*

[a] Wire rope and sand are used nowadays.
[b] Emery powder: *cf.* § 54. So too, probably, the Indian variety, but this may include common corundum (Warmington, *op. cit.*, p. 247).
[c] Probably finely ground quartz-sand. So too, perhaps, the Ethiopian sand.

IX. But whoever first discovered how to cut marble and carve up luxury into many portions was a man of misplaced ingenuity. The cutting of the marble is effected apparently by iron, but actually by sand, for the saw merely presses the sand upon a very thinly traced line, and then the passage of the instrument, owing to the rapid movement to and fro, is in itself enough to cut the stone.[a] The Ethiopian variety of this sand is the most highly esteemed; for, to make matters worse, material for cutting marble is sought from as far afield as Ethiopia; and, moreover, men go in search of it even to India, which it was once an affront to strict morality to visit even for pearls. The Indian is the next most highly praised, but the Ethiopian is finer and cuts without leaving any roughness. The Indian does not give the stone such a smooth surface. However, people engaged in polishing marble are strongly recommended to rub marble with it when it has been calcined. There is a similar fault in the Naxian sand[b] and in that of Coptos, which is known as the Egyptian variety.[c] These were the kinds used for cutting marble in early times. Later there was discovered an equally valuable sand from a sandbank in the Adriatic which is uncovered only at low tide. Consequently, its position is not easy to mark. Now also fraudulent craftsmen dare to cut slabs with any kind of sand from any river, a waste which very few clients perceive. For in fact the coarser the sand, the less accurate the sections it grinds, the more marble it wears away, and owing to the rough surfaces produced, the more work it leaves for those responsible for polishing the slabs. Hence the cut slabs are made thinner. Again, for pol-

antur crustae. rursus Thebaica polituris accommodatur et quae fit e poro lapide aut e pumice.

54 X. Signis e marmore poliendis gemmisque etiam scalpendis atque limandis Naxium diu placuit ante alia. ita vocantur cotes in supra ⟨dicta⟩ [1] insula genitae. vicere postea ex Armenia invectae.

55 XI. Marmorum genera et colores non attinet dicere in tanta notitia nec facile est enumerare in tanta multitudine. quoto cuique enim loco non suum marmor invenitur? et tamen celeberrimi generis dicta sunt in ambitu terrarum cum gentibus suis. non omnia autem in lapicidinis gignuntur, sed multa et sub terra sparsa, pretiosissimi quidem generis, sicut Lacedaemonium viride cunctisque hilarius, sicut et Augusteum ac deinde Tibereum,[2] in Aegypto Augusti ac Tiberii primum principatu reperta. differentia eorum est ab ophite, cum sit illud serpentium maculis simile, unde et nomen accepit, quod haec maculas diverso modo colligunt, Augusteum undatim crispum in vertices, Tibereum

[1] in supra ⟨dicta⟩ *ego*; *cf. XXXVI. 65*: in Cypro *codd.*: in Creta *coni. Ianus.*

[2] Tibereum B: Tiberium *aliquot codd.*: Tiberianum h *cod. Poll.*: Tibereium *coni. Mayhoff.*

---

[a] Again finely ground quartz-sand.

[b] *Poros* is a Greek term used vaguely of building stone that possesses no special merits in respect of colour or surface. Normally it seems to be applied to limestone other than marble. See p. 106, n. [c].

[c] The large deposits on Naxos are still exploited. The Armenian emery may have come from a district in Russian Armenia, 30 miles S. of Elisavetpol (the name has probably been altered by the present régime). The reading *in supra dicta insula* makes sense, but is open to the objection that it is preceded not by the name of the island, but only by its adjective *Naxium.* There is, however, a parallel instance in XXXVII. 66, where *in ea insula* (sc. *Cypro*) refers to the adjective *Cyprii.*

ishing marble, sand from the Thebaid[a] is suitable, as well as powder made from limestone[b] or pumice.

X. For smoothing marble statues and also for engraving and filing down gems the Naxian stone *Emery.* was for long the favourite. This is the name given to the whetstones found in the island referred to above.[c] Later, those imported from Armenia were preferred.

XI. It is not important to mention the colours and *Varieties of coloured marbles.* species of marbles when they are so well known, nor is it easy to list them when they are so numerous. For there are few places for which a characteristic marble is not found to exist. Even so, the most famous kinds have already been mentioned, along with the peoples whose names they bear, in the course e.g. IV. 67; V. 22. of our circuit of the world. Not all of them occur in quarries, but many are found scattered also beneath the earth's surface, some indeed being very valuable, like the green Lacedaemonian,[d] which is brighter than any other marble, or the Augustean and, more recently, the Tiberian, which were found in Egypt for the first time during the principates of Augustus and 27 B.C.–A.D. 14; A.D. 14–37. Tiberius respectively.[e] From serpentine, the markings of which resemble snakes—hence its name—these stones differ in that their markings are grouped differently. Those of the Augustean curl over like waves so as to form coils, while the Tiberian has

[d] Green porphyry (verde antico).

[e] These may have been varieties of coarse granite.

56 sparsa, non convoluta, canitie. neque ex ophite columnae nisi parvae admodum inveniuntur. duo eius genera: molle candidi, nigricantis[1] durum.[2] dicuntur ambo capitis dolores sedare adalligati et serpentium ictus. quidam phreneticis ac lethargicis adalligari iubent candicantem. contra serpentes autem a quibusdam praecipue laudatur ex iis quem tephrian appellant a colore cineris. vocatur et Memphites a loco, gemmantis naturae. huius usus conteri et iis quae urenda sint aut secanda ex aceto inlini; obstupescit ita corpus nec sentit cruciatum.
57 rubet porphyrites in eadem Aegypto; ex eodem candidis intervenientibus punctis leptopsephos vocatur. quantislibet molibus caedendis sufficiunt lapicidinae. statuas ex eo Claudio Caesari procurator eius in urbem ex Aegypto advexit Vitrasius[3] Pollio, non admodum probata novitate; nemo certe postea
58 imitatus est. invenit eadem Aegyptus in Aethiopia quem vocant basaniten,[4] ferrei coloris atque duritiae, unde et nomen ei dedit. numquam hic maior repertus est quam in templo Pacis ab imperatore

[1] nigricantis *J. Müller, Mayhoff*: nigricans *codd., Sillig.*
[2] durum h *J. Müller, Mayhoff*: duri *ceteri codd., Sillig*: *an recte?*
[3] Vitrasius *Hardouin*: vitriasius *aut* vitriarius *codd.*
[4] basaniten B: basalten (-te V) VRdh *edd. vett.*

[a] From τέφρα, ashes.
[b] Lit. 'the fine' or 'subtle pebble,' perhaps because of its delicate markings. The Romans used the quarries at Gebel Dokhan, between Asiut and the Red Sea.

scattered greyish-white spots which are not rolled into coils. Another difference is that only quite small columns made of serpentine are to be found. *Serpentine.* It has two varieties: one is soft and white, the other hard and dark. When worn as amulets, both are said to relieve headaches and snakebites. Some authorities recommend the white variety as an amulet to be worn by sufferers from delirium or a coma. But as an antidote to snakebites some praise particularly the variety of serpentine known as 'tephrias'[a] from its ashen colour. Another stone, named from its place of origin, is the Memphis stone, which *Dolomite (?).* is like a gem. The method of using this is to grind it to powder and to smear it mixed with vinegar on places which need to be cauterized or lanced; thus the body is numbed and feels no severe pain. In Egypt too there is red porphyry, of which a variety *Imperial porphyry.* mottled with white dots is known as 'leptopsephos.'[b] The quarries supply masses of any size to be cut away. Statues of this stone were brought from Egypt to the emperor Claudius in Rome by his official agent Vitrasius Pollio, an innovation that did not meet with much approval. No one at least has since followed his example. The Egyptians also discovered in Ethiopia what is called 'basanites,' a *Greywacke.* stone which in colour and hardness resembles iron: hence the name they have given it.[c] No larger specimen of this stone has ever been found than that dedicated by the emperor Vespasian in the temple of

[c] From βάσανος, 'touchstone,' but the explanation is forced, and *basanites* is really a transliteration of the Egyptian word, *bekhen*. *Bekhen* was not basalt, but the greywacke of the Wadi Hammamet.

Vespasiano Augusto dicatus argumento Nili, sedecim liberis circa ludentibus, per quos totidem cubita summi incrementi augentis se amnis eius intelleguntur. non absimilis illi narratur in Thebis delubro Serapis, ut putant, Memnonis statuae dicatus, quem cotidiano solis ortu contactum radiis crepare tradunt.
59 XII. Onychem in Arabiae tantum montibus nec usquam aliubi nasci putavere nostri veteres, Sudines in Carmania.[1] potoriis primum vasis inde factis, dein pedibus lectorum sellisque, Nepos Cornelius tradit magno fuisse miraculo, cum P. Lentulus Spinther amphoras ex eo Chiorum magnitudine cadorum ostendisset, post quinquennium deinde XXXII pedum longitudinis columnas vidisse se.
60 variatum in hoc lapide et postea est, namque pro miraculo insigni quattuor modicas in theatro suo Cornelius Balbus posuit; nos ampliores XXX vidimus in cenatione, quam Callistus Caesaris Claudi libertorum, potentia notus, sibi exaedificaverat. hunc

[1] Carmania Bd: Germania *ceteri codd.*

---

[a] *argumento* is taken as an ablative. If it is dative (cf. *statuae dicatus* below), the meaning is 'devoted by Vespasian to the subject of the Nile.' This implies that Vespasian commissioned the work for his temple of Peace, which is unlikely. Outside Egypt the work would lose much of its significance.

[b] About 8½ metres. According to Pliny (V. 58), this was the *iustum incrementum.* 12 cubits meant famine, 16 brought luxuries, and a higher level shortened the sowing season. Cf. XVIII. 167–168.

[c] The 'speaking' Memnon is one of two seated statues at Thebes, each at least 64 feet high, representing Amenophis (Amenhotep) III of Dynasty XVIII.

[d] Pliny probably misunderstood his source, which no doubt contained the phrase Ἀράβιον ὄρος, the name given to the

Peace, the subject of which is the Nile,[a] with sixteen of the river-god's children playing around him, these denoting the number of cubits reached by the river in flood at its highest desirable level.[b] Not unlike this, we are told, is the block in the shrine of Serapis at Thebes chosen for a statue of what is supposed to be Memnon; and this is said to creak every day at dawn as soon as the sun's rays reach it.[c] § 102.

XII. Onyx marble was supposed by our old authorities to occur in the mountains of Arabia[d] and nowhere else. Sudines,[e] however, thought that it occurred in Carmania. At first only drinking-vessels were made of it, and then the feet of couches and the frames of chairs. Cornelius Nepos records that it was considered quite extraordinary when Publius Lentulus Spinther exhibited wine jars of onyx marble big enough to hold 9 Chian gallons,[f] but that only five years later he himself saw columns 32 feet long. There were striking changes in the history of the stone even after this, for the four small columns placed by Cornelius Balbus in his theatre caused a sensation, whereas I have seen thirty quite large ones in the dining-room which the emperor Claudius' freedman, the notoriously powerful Callistus, built for himself. This stone is sometimes

Onyx marble. *Consul in 57 B.C.* *13 B.C.* *A.D. 41–54.*

hills on the east (*i.e.*, the Arabian) side of the Nile. Hence the onyx marble here mentioned is the same as that found *circa Thebas Aegyptias* (XXXVI. 61).

[e] An astrologer, who wrote on the mystic properties of stones about 240 B.C. He lived at the court of Attalus I of Pergamum.

[f] *Cadus* here stands for *metretes.* The Attic *metretes* was roughly equivalent to 8½ gallons. The Chian measure is unknown, but must have been similar.

aliqui lapidem alabastriten vocant, quem cavant et ad vasa unguentaria, quoniam optume servare in-
61 corrupta dicatur. idem et ustus emplastris convenit. nascitur circa Thebas Aegyptias et Damascum Syriae. hic ceteris candidior, probatissimus vero in Carmania, mox in India, iam quidem et in Syria Asiaque, vilissimus autem et sine ullo nitore in Cappadocia. probantur quam maxime mellei coloris, in vertices maculosi atque non tralucidi. vitia in iis corneus colos aut candidus et quidquid[1] simile vitro est.

62 XIII. Paulum distare ab eo in unguentorum fide multi existimant lygdinos, in Paro repertos amplitudine qua lances craterasque non excedant, antea ex Arabia tantum advehi solitos, candoris eximii. magnus et duobus contrariae inter se naturae honos, corallitico in Asia reperto mensurae non ultra bina cubita, candore proximo ebori et quadam similitudine. e diverso niger est Alabandicus terrae suae nomine, quamquam et Mileti nascens, ad purpuram tamen magis aspectu declinante. idem liquatur igni fundi-
63 turque ad usum vitri. Thebaicus lapis interstinctus aureis guttis invenitur in Africae parte Aegypto

[1] quicquid VRd: quod B².

---

[a] *I.e.*, ἀλάβαστρα, which were made also of glass.
[b] Possibly a marble even whiter than most of the Parian marble, but perhaps not a marble at all.
[c] Almandine could have been fused without much difficulty into a black glass. For almandine, see XXXVII. 92 and notes.

called 'alabastrites,' for it is hollowed out to be used also as unguent jars[a] because it is said to be the best means of keeping unguents fresh. It is suitable too, when burnt, for plasters. It occurs in the neighbourhood of Thebes in Egypt and of Damascus in Syria. The latter variety is whiter than the rest, but that of Carmania is the most excellent. Next comes the Indian, and then of course there is that of Syria and the province of Asia, while the least valuable is the Cappadocian, which has no lustre whatsoever. The specimens most warmly recommended are the honey-coloured, marked with spirals, and opaque. A colour resembling that of horn, or else gleaming white, and any suggestion of a glassy look are serious faults in onyx marble.

XIII. Many people consider that for the preservation of unguents there is little to choose between onyx marble and the 'lygdinus,'[b] which is found in *Lygdinus.* Paros in pieces no larger than a dish or mixing bowl, although in earlier times it was normally imported only from Arabia. It is of an exceptionally brilliant whiteness. Two stones of a directly opposed character are also greatly esteemed. There is the coral *Coral limestone.* stone found in the province of Asia in sizes not exceeding two cubits, with a white colour close to that of ivory and a certain resemblance to it in appearance. On the other hand, the stone named after Alabanda, its place of origin, although it occurs *Almandine.* also at Miletus, is black. In appearance, however, this stone tends rather to have a reddish tinge. It can, moreover, be melted by fire and fused to serve as glass.[c] The Thebaic stone mottled with gold *Red granite.* spots is found in a part of Africa that has been assigned

adscripta, coticulis ad terenda collyria quadam utilitate naturali conveniens, circa Syenen vero Thebaidis syenites, quem antea pyrrhopoecilon vocabant.

64 XIV. Trabes ex eo fecere reges quodam certamine, obeliscos vocantes Solis numini sacratos. radiorum eius argumentum in effigie est, et ita significatur nomine Aegyptio. primus omnium id instituit Mesphres,[1] qui regnabat in Solis urbe, somnio iussus; hoc ipsum inscriptum in eo, etenim scalpturae illae effigiesque quas videmus Aegyptiae sunt litterae.
65 postea et alii excidere reges. statuit eos in supra dicta urbe Sesothes quattuor numero, quadragenum octonum cubitorum longitudine, Rhamsesis autem, quo regnante Ilium captum est, cxxxx [2] cubitorum. idem [3] digressis inde ubi fuit Mnevidis regia posuit alium, longitudine quidem cxx cubitorum, sed prodigiosa crassitudine, undenis per latera cubitis.
66 opus id fecisse dicuntur $\overline{\text{cxx}}$ hominum. ipse rex, cum surrecturus esset vereretur que ne machinae ponderi non sufficerent, quo maius periculum curae artificum

[1] Mesphres *Zoega, Sillig*; *cf.* § *69*: Mespheres B *Mayhoff.*
[2] CXXXX *cod.* B: XL *codd.* La.
[3] *post* idem *lac. indicat Mayhoff.*

---

[a] *I.e.* 'mottled red.'
[b] Pliny is right. *Tekhen* means both 'sunbeam' and 'obelisk.'
[c] Perhaps Senwosret I of Dynasty XII, but possibly Ramses II.
[d] Mnevis was not a king, but a god worshipped in the form of a bull.
[e] The proportions are not abnormal. In general, the height is about ten times the maximum breadth, which is at the base.

to Egypt and is naturally well adapted for use as stones on which to grind eye-salves. The granite of Syene is found in the neighbourhood of Aswan in the Thebaid and in earlier times was known as 'pyrrhopoecilos.'[a]

Egyptian obelisks.

XIV. Monoliths of this granite were made by the kings, to some extent in rivalry with one another. They called them obelisks and dedicated them to the Sun-god. An obelisk is a symbolic representation of the sun's rays, and this is the meaning of the Egyptian word for it.[b] The first of all the kings to undertake such a task was Mesphres, who ruled at Heliopolis, the city of the Sun, and was commanded to do so in a dream. This very fact is inscribed on the obelisk; for those carvings and symbols that we see are Egyptian letters. Later, other kings also cut obelisks. Sesothes[c] set up four of them in the city just mentioned, these being 48 cubits in height, while Ramses, who ruled at the time of the capture of Troy, erected one of 140 cubits. Ramses also erected another at the exit from the precinct where the palace of Mnevis[d] once stood, and this is 120 cubits high, but abnormally thick,[e] each side measuring 11 cubits. The completion of this work is said to have required 120,000 men. When the obelisk was about to be erected, the king feared that the scaffolding[f] would not be strong enough for the weight, and in order to force an even greater danger upon

Thutmose III, Menkhperrē, of Dynasty XVIII.

Ramses II, of Dynasty XIX.

[f] *Machinae* may mean 'hoists.' Anyhow, Pliny's ideas were anachronistic. The Egyptians probably hauled the obelisk up an earth ramp and tipped it into a trench filled with loose sand, which was then removed so as to allow the obelisk to settle on to its base.

denuntiaret, filium suum adalligavit cacumini, ut salus eius apud molientes prodesset et lapidi. hac admiratione operis effectum est, ut, cum oppidum id expugnaret Cambyses rex ventumque esset incendiis ad crepidines obelisci, extingui iuberet molis reve-
67 rentia qui nullam habuerat urbis. sunt et alii duo, unus a Zmarre positus, alter a Phio sine notis, quadragenum octonum cubitorum. Alexandriae statuit unum Ptolemaeus Philadelphus octoginta cubitorum. ceciderat [1] eum Necthebis [2] rex purum, maiusque opus in devehendo statuendove multo extitit [3] quam in excidendo. a Satyro architecto aliqui devectum tradunt rate, Callixenus a Phoenice, fossa perducto usque ad iacentem obeliscum Nilo,
68 navesque duas in latitudinem patulas pedalibus ex eodem lapide ad rationem geminati per duplicem mensuram ponderis oneratas ita, ut subirent obeliscum pendentem extremitatibus suis in ripis utrimque; postea egestis laterculis adlevatas naves excepisse onus; statutum autem in sex taleis [4] e monte eodem, et artificem donatum talentis L. hic

[1] ceciderat BRd *Detlefsen*: exciderat *cod. Poll., Sillig, Mayhoff.*

[2] Necthebis *codd.*: Nectanebis *Urlichs.*

[3] multo extitit *ego*: multo est VRd: multum est B: multo *Sillig*: inventum est *Urlichs, Mayhoff.*

[4] taleis *ego*: talis *codd.*

---

[a] Pepi I of Dynasty VI, but his appearance in this context is an anomaly.

[b] A Rhodian who described some of the great ships of the Ptolemies. He flourished about 155 B.C.

the attention of the workmen, he himself tied his son to the pinnacle, intending that the stone should share the benefit of his deliverance at the hands of the labourers. This work was so greatly admired that when Cambyses was storming the city and the 529–521 B.C.
conflagration had reached the base of the obelisk, he ordered the fires to be put out, thus showing his respect for the mighty block when he had felt none for the city itself. There are also two other obelisks here, one set up by Zmarres, and the other by *Ramses II,*
Phius:[a] both lack inscriptions and are 48 cubits in *Usermaatrē.*
height. At Alexandria Ptolemy Philadelphus erec- 285–247 B.C.
ted one of 80 cubits. This had been hewn uninscribed by King Necthebis, and it proved to be a greater achievement to carry it down the river and erect it than to have quarried it. According to some authorities, it was carried downstream by the engineer Satyrus on a raft; but according to Callixenus,[b] it was conveyed by Phoenix, who by digging a canal brought the waters of the Nile right up to the place where the obelisk lay. Two very broad ships were loaded with cubes of the same granite as that of the obelisk, each cube measuring one foot, until calculations showed that the total weight of the blocks was double that of the obelisk, since their total cubic capacity was twice as great. In this way, the ships were able to come beneath the obelisk, which was suspended by its ends from both banks of the canal. Then the blocks were unloaded and the ships, riding high, took the weight of the obelisk. It was erected on six stone baulks from the same quarries, and the deviser of the scheme received 50 talents for his services. The obelisk was once in the

fuit in Arsinoeo positus a rege supra dicto munus
69 amoris in coniuge[1] eademque sorore Arsinoe. inde eum navalibus incommodum Maximus quidam praefectus Aegypti transtulit in forum, reciso cacumine, dum vult fastigium addere auratum, quod postea omisit. et alii duo sunt Alexandreae ad portum in Caesaris templo, quos excidit Mesphres[2] rex, quadragenum binum cubitorum.

Super omnia accessit difficultas mari Romam
70 devehendi, spectatis admodum navibus. divus Augustus eam quae priorem advexerat miraculi gratia Puteolis perpetuis navalibus dicaverat; incendio consumpta ea est. divus Claudius aliquot per annos adservatam qua C. Caesar inportaverat, omnibus quae umquam in mari visa[3] sunt mirabiliorem, in ipsa turribus Puteolis e pulvere exaedificatis, perductam Ostiam portus gratia mersit. alia ex hoc cura navium quae Tiberi subvehant, quo experimento patuit non minus aquarum huic amni
71 esse quam Nilo. is autem obeliscus quem divus Augustus in circo magno statuit excisus est a rege

[1] amoris in coniuge *codd.*, *Sillig*: amoris, coniuge *Mayhoff*: amoris in coniugem, *etc. Pintianus. An recte?*
[2] Mesphres B; *cf.* § *64*: Mestires Vdh.
[3] visa BRd: visae *cod.* h.

[a] Thutmose III of Dynasty XVIII. *Cf.* § 64. One of these is Cleopatra's Needle in London; the other is in New York.

Arsinoeum, having been placed there by the king to whom we previously referred as a tribute to his affection for his wife and sister Arsinoe. From there, because it was in the way of the dockyards, it was moved to the market-place by a certain Maximus, a governor of Egypt, who cut off the point, intending to add a gilt pinnacle in its place, a plan which he later abandoned. There are two other obelisks at Alexandria in the precinct of the temple of Caesar near the harbour. These were cut by King Mesphres[a] and measure 42 cubits.

Obelisks at Rome.

Above all, there came also the difficult task of transporting obelisks to Rome by sea. The ships used attracted much attention from sightseers. That which carried the first of two obelisks was solemnly laid up by Augustus of Revered Memory in a permanent dock at Pozzuoli to celebrate the remarkable achievement; but later it was destroyed by fire. The ship used by the Emperor Gaius for bringing a third was carefully preserved for several years by Claudius of Revered Memory, for it was the most amazing thing that had ever been seen at sea. Then caissons made of cement[b] were erected in its hull at Pozzuoli; whereupon it was towed to Ostia and sunk there by order of the emperor, so to contribute to his harbour-works. Then there is another problem, that of providing ships that can carry obelisks up the Tiber; and the successful experiment shows that the river has just as deep a channel as the Nile. The obelisk placed by Augustus of Revered Memory

XVI. 201–202.

[b] *Pulvis* is a local earth of volcanic origin (pozzolana), which was the essential ingredient of a hard and durable cement (XXXV. 166).

Psemetnepserphreo,[1] quo regnante Pythagoras in Aegypto fuit, LXXXV [2] pedum et dodrantis praeter basim eiusdem lapidis; is vero, quem in campo Martio, novem pedibus minor, a Sesothide. inscripti ambo rerum naturae interpretationem Aegyp-
72 tiorum philosophia continent. XV. Ei qui est in campo divus Augustus addidit mirabilem usum ad deprendendas solis umbras dierumque ac noctium ita magnitudines, strato lapide ad longitudinem obelisci, cui par fieret umbra brumae confectae die sexta hora paulatimque per regulas, quae sunt ex aere inclusae, singulis diebus decresceret ac rursus augesceret, digna cognitu res, ingenio [3] Facundi Novi mathematici. is apici auratam pilam addidit, cuius vertice umbra colligeretur in se ipsam, alias enormiter iaculante apice, ratione, ut ferunt, a capite hominis
73 intellecta. haec observatio [4] xxx iam fere annis non congruit, sive solis ipsius dissono cursu et caeli aliqua

[1] Psemetnepserphreo *Ianus, Mayhoff*: Spemetnepserphreo B: Psemetnepherphreo *Urlichs*. *An rectius?*
[2] LXXXV *cod.* B: CXXV *aut* XXCV *ceteri codd.*
[3] ingenio BVRd: et ingenio Th: invento *coni. Mayhoff.*
[4] observatio Bd: deservatio VR.

---

[a] Pliny seems to have confused these two obelisks. That of the Circus Maximus (now in the Piazza del Popolo) was that of Seti I (Dynasty XIX) and his son Ramses II (1348–1282 B.C.), one of whose names was Sessurā: hence 'Sesothis' or, more frequently, 'Sesostris.' The obelisk of the Campus Martius (now in Monte Citorio) is that of Psammetichus II (594–589 B.C., Dynasty XXVI). 'Psemetnepserphreus' is a corrupt form of two of his names, Psamtik and Neferibrē.

[b] Pliny may have thought that the hieroglyphs of birds and other animals had something to do with natural history.

[c] *Ad longitudinem* here should mean 'in conformity with

in the Circus Maximus was cut by King Psemetnepserphreus, who was reigning when Pythagoras was in Egypt, and measures 85 feet and 9 inches, apart from its base, which forms part of the same stone. The obelisk in the Campus Martius, however, which is 9 feet less, was cut by Sesothis.[a] Both have inscriptions comprising an account of natural science according to the theories of the Egyptian sages.[b] XV. The one in the Campus was put to use in a remarkable way by Augustus of Revered Memory so as to mark the sun's shadow and thereby the lengths of days and nights. A pavement was laid down for a distance appropriate to the height [c] of the obelisk so that the shadow cast at noon on the shortest day of the year might exactly coincide with it. Bronze rods let into the pavement were meant to measure the shadow day by day as it gradually became shorter and then lengthened again. This device deserves to be carefully studied, and was contrived by the mathematician Novius Facundus. He placed on the pinnacle a gilt ball, at the top of which the shadow would be concentrated, for otherwise the shadow cast by the tip of the obelisk would have lacked definition. He is said to have understood the principle from observing the shadow cast by the human head. The readings thus given have for about thirty years past failed to correspond to the calendar, either because the course of the sun itself is anomalous and has been altered by some change

the height (lit. length),' and not 'exactly equivalent to the height,' for in this case the pavement would have been too short, as Pliny must have known from studying the principles of the *gnomon* (II. 182; VII. 213–214).

ratione mutato sive universa tellure a centro suo aliquid emota (ut deprehendi et aliis in locis accipio) sive urbis tremoribus ibi tantum gnomone intorto sive inundationibus Tiberis sedimento molis facto, quamquam ad altitudinem inpositi oneris in terram
74 quoque dicuntur acta fundamenta. Tertius est Romae in Vaticano Gai et Neronis principum circo—ex omnibus unus omnino fractus est [1] in molitione [2]—quem [3] fecerat Sesosidis filius Nencoreus. eiusdem remanet et alius centum cubitorum, quem post caecitatem visu reddito ex oraculo Soli sacravit.

75 XVI. Dicantur obiter et pyramides in eadem Aegypto, regum pecuniae otiosa [4] ac stulta ostentatio, quippe cum faciendi eas causa a plerisque tradatur, ne pecuniam successoribus aut aemulis insidiantibus praeberent aut ne plebs esset otiosa. multa circa hoc vanitas hominum illorum fuit.
76 vestigia complurium incohatarum extant. una est in Arsinoite nomo, duae in Memphite, non procul labyrintho, de quo et ipso dicemus, totidem ubi fuit

[1] fractus est BVRd: factus est *cod. Parisinus 6803*: factus est *aut* factus *vett. edd.*
[2] in molitione Rd: immolitione V: in immolatione B: in imitatione *cod.* h, *cod. Parisinus 6803.*
[3] quem BVRd: eius quem *cod.* h.
[4] otiosa *codd.*: odiosa *Perizonius.*

[a] It now stands before St. Peter's.
[b] The obelisk is not known to have been damaged, but Pliny may have been misled. Although the reading is doubtful, the alternative reading *factus (est) in imitatione eius quem fecerat, etc.*, is far less convincing, even though there is reason to suppose that this obelisk is Roman and not Pharaonic.
[c] Perhaps Amenemhet II, Nebkaurē, son of Senwosret I of Dynasty XII. *Cf.* § 65.

in the behaviour of the heavens or because the whole earth has shifted slightly from its central position, a phenomenon which, I hear, has been detected also in other places. Or else earth-tremors in the city may have brought about a purely local displacement of the shaft or floods from the Tiber may have caused the mass to settle, even though the foundations are said to have been sunk to a depth equal to the height of the load they have to carry. The third obelisk in Rome stands in the Vatican Circus that was built by the emperors Gaius and Nero.[a] It was the only one of the three that was broken during its removal.[b] It was made by Nencoreus,[c] the son of Sesosis; and there still exists another that belongs to him: it is 100 cubits in height and was dedicated by him to the Sun-god in accordance with an oracle after he had been stricken with blindness and had then regained his sight.

XVI. In Egypt too are the pyramids, which must be mentioned, if only cursorily. They rank as a superfluous and foolish display of wealth on the part of the kings, since it is generally recorded that their motive for building them was to avoid providing funds for their successors or for rivals who wished to plot against them, or else to keep the common folk occupied. Much vanity was shown by these kings in regard to such enterprises, and the remains of several unfinished pyramids[d] are still in existence. There is one in the nome of Arsinoe, and there are two in that of Memphis, not far from the labyrinth, a

The pyramids.

[d] Pliny's authority may have mistaken ruined pyramids for incomplete structures. 'Several' is, if anything, an understatement: at least 26 major pyramids are known.

Moeridis lacus, hoc est fossa grandis, sed[1] Aegyptiis inter mira ac memoranda narrata. harum cacumina[2] extra aquam eminere dicuntur. reliquae tres, quae orbem terrarum inplevere fama, sane conspicuae undique adnavigantibus, sitae sunt in parte Africae monte saxeo sterilique inter Memphim oppidum et quod appellari diximus Delta, a Nilo minus IIII milia passuum, a Memphi $\overline{\text{VII}}$ D, vico adposito quem vocant Busirin; in eo sunt adsueti scandere illas.

77 XVII. Ante est sphinx vel magis narranda, de qua siluere, numen accolentium. Harmain regem putant in ea conditum et volunt invectam videri; est autem saxo naturali elaborata. rubrica[3] facies monstri colitur. capitis per frontem ambitus centum duos pedes colligit, longitudo pedum CCXLIII[4] est, altitudo a ventre ad summam aspidem in capite, LXIS.[5]

[1] sed *codd.*: et *Urlichs e coni. Iani.*
[2] CC cubita *post* cacumina *suppl. Mayhoff.*
[3] rubrica B: rubricata *coni. Warmington.*
[4] CCXLIII *cod.* B: CXLIII *edd.*: pedum . . . altitudo *om. ceteri codd.*
[5] LXIS *cod.* B: LXII VRd.

---

[a] Lake Moeris, now represented by the much smaller Birket Karûn in the Fayûm, was almost certainly not artificial. The two 'pyramids,' which stood at the *edge* of the lake, were the pedestals of two large statues of Amenemhet III, of Dynasty XII, who may have been responsible for regulating the flow of water between the Nile and the lake, and *vice versâ*.

[b] *I.e.*, as opposed to the 'Arabian' side: see p. 46, n. [d], and p. 62, n. [a].

[c] The Sphinx may represent King Chephren (Dynasty IV), the builder of one of the three pyramids, in the guise of the Sun-god. It was restored in Dynasty XVIII and at this time was identified with the Sun-god Harmachis (hence perhaps Harmais). Subsequently it was buried by drifting sand and

work which also will be described. Two more stand XXXVI. 84. in a position once occupied by Lake Moeris, which is merely a vast excavation, but is nevertheless recorded by the Egyptians as one of their remarkable and memorable achievements.[a] The points of these pyramids are said to tower above the surface of the water. The other three pyramids, the fame of which has reached every part of the world, are of course visible to travellers approaching by river from any direction.

The pyramids of Gizeh (Dynasty IV).

They stand on a rocky hill in the desert on the African side of the river[b] between the city of Memphis and what, as we have already explained, is known as the Delta, at a point less than 4 miles V. 48. from the Nile, and $7\frac{1}{2}$ miles from Memphis. Close by is a village called Busiris, where there are people who are used to climbing these pyramids.

The Sphinx.

XVII. In front of them is the Sphinx, which deserves to be described even more than they, and yet the Egyptians have passed it over in silence. The inhabitants of the region regard it as a deity. They are of the opinion that a King Harmais is buried inside it and try to make out that it was brought to the spot: it is in fact carefully fashioned from the native rock.[c] The face of the monstrous creature is painted with ruddle as a sign of reverence. The circumference of the head when measured across the forehead amounts to 102 feet, the length is 243 feet,[d] and the height from the paunch to the top of the asp on its head is $61\frac{1}{2}$ feet.

not uncovered until the Ptolemaic period, or even later. This would account for the silence of the Egyptians, and incidentally of Herodotus and Strabo.

[d] See *apparatus*. The length of the Sphinx is about 240 feet.

78 Pyramis amplissima ex Arabicis lapicidinis constat. CCCLX milia hominum annis XX eam construxisse produntur. tres vero factae annis LXXXVIII, mensibus
79 IIII. qui de iis scripserunt[1]—sunt Herodotus, Euhemerus, Duris Samius, Aristagoras, Dionysius, Artemidorus, Alexander polyhistor, Butoridas, Antisthenes, Demetrius, Demoteles, Apion—inter omnes eos non constat, a quibus factae sint, iustissimo casu obliteratis tantae vanitatis auctoribus. aliqui ex iis prodiderunt in raphanos et alium ac cepas MDC [2] talenta erogata. amplissima septem iugera optinet
80 soli. quattuor angulorum paribus intervallis DCCLXXXIII pedes singulorum laterum, altitudo a cacumine ad solum pedes DCCXXV colligit, ambitus cacuminis pedes XVIS. alterius intervalla singula per quattuor angulos pedes DCCLVIIS comprehendunt. tertia minor quidem praedictis, sed multo spectatior, Aethiopicis lapidibus adsurgit CCCLXIII pedibus inter
81 angulos. vestigia aedificationum [3] nulla exstant, harena late pura circa, lentis similitudine, qualis in

[1] scripserunt VRdh: scripserint B *Mayhoff.*
[2] MDC RdT: CCDC *cod.* V: MD *cod.* B.
[3] aedificationum VRd: interaedificationum B: in terra aed. *coni. Ianus.*

---

[a] Pliny means limestone from 'the Arabian Hills' (see p. 46, n. [d]) on the E. side of the Nile. Only the casing was made of this limestone.

[b] Or possibly 'all three were built within a period of 88 years and 4 months.'

[c] This figure is meant to apply to the height along the sloping sides, as with the pyramid of Mycerinus. The original perpendicular height was 481 feet.

The pyramid of Cheops.

The largest pyramid is made of stone from stone from the Arabian quarries.[a] It is said that 360,000 men took 20 years to build it. The time taken to build all three was 88 years and 4 months.[b] The authors who have written about them, namely Herodotus, Euhemerus, Duris of Samos, Aristagoras, Dionysius, Artemidorus, Alexander Polyhistor, Butoridas, Antisthenes, Demetrius, Demoteles and Apion, are not all agreed as to which kings were responsible for their construction, since chance, with the greatest justice, has caused those who inspired such a mighty display of vanity to be forgotten. Some of the writers mentioned record that 1600 talents were spent on radishes, garlic and onions alone. The largest pyramid covers an area of nearly 5 acres. Each of the four sides has an equal measurement from corner to corner of 783 feet; the height from ground-level to the pinnacle amounts to 725 feet,[c] while the circumference of the pinnacle is $16\frac{1}{2}$ feet. As for the second pyramid, each of its sides from corner to corner totals $757\frac{1}{2}$ feet. The third is smaller than those already mentioned, but on the other hand is far more splendid, with its Ethiopian stone [d] towering to a height of 363 feet along its sloping sides between the corners. No traces of the building operations survive. All around far and wide there is merely sand shaped like lentils,[e] such as is found in

Hdt. ii. 124.

The pyramid of Chephren.

The pyramid of Mycerinus.

[d] The *lower* part of this pyramid was faced with Aswan granite.

[e] The 'lentils' are nummulites, small fossils from the disintegrated limestone casing of the pyramids (Stanley Smith).

maiore parte Africae. quaestionum summa est, quanam ratione in tantam altitudinem subiecta sint caementa. alii nitro ac sale adaggeratis cum crescente opere et peracto fluminis inrigatione dilutis; alii lateribus e luto factis[1] exstructos pontes, peracto opere lateribus in privatas domos distributis, Nilum enim non putant rigare potuisse multo humiliorem. in pyramide maxima est intus puteus LXXXVI
82 cubitorum; flumen illo admissum arbitrantur. mensuram altitudinis earum omnemque similem deprehendere invenit Thales Milesius umbram metiendo, qua hora par esse corpori solet. haec sunt pyramidum miracula, supremumque illud, ne quis regum opes miretur, minimam ex iis, sed laudatissimam, a Rhodopide meretricula factam. Aesopi fabellarum philosophi conserva quondam et contubernalis haec fuit, maiore miraculo, tantas opes meretricio esse conquisitas.

83 XVIII. Magnificatur et alia turris a rege facta in insula Pharo portum optinente Alexandriae, quam constitisse DCCC talentis tradunt, magno animo, ne

[1] lateribus e luto factis Vdh: lateribus B.

---

[a] Or does *in maiore parte Africae* mean 'on most of the African side of the Nile'? *Cf.* § 76.

[b] Possibly a ramp and embankments of brick and earth were used.

[c] Herodotus (II. 134) rightly treats this story with scepticism.

most of Africa.[a] The crucial problem is to know how the masonry was laid to such a great height. Some think that ramps of soda and salt were piled against the structure as it was raised; and that after its completion these were flooded and dissolved by water from the river. Others hold that bridges were built of mud bricks and that when the work was finished the bricks were allotted to individuals for building their own houses.[b] For it is considered impossible that the Nile, flowing at a far lower level, could have flooded the site. Within the largest pyramid is a well 86 cubits deep, into which water from the river is supposed to have been brought by a channel. The method of measuring the height of the pyramids and of taking any similar measurement was devised by Thales of Miletus, the c. 585 B.C.
procedure being to measure the shadow at the hour at which its length is expected to be equal to the height of the body that is throwing it. Such are the wonders of the pyramids; and the last and greatest of these wonders, which forbids us to marvel at the wealth of kings, is that the smallest but most greatly admired of these pyramids was built by Rhodopis, a mere prostitute. She was once the fellow-slave and concubine of Aesop, the sage who composed the Fables; and our amazement is all the greater when we reflect that such wealth was acquired through prostitution.[c]

The Pharos at Alexandria.

XVIII. Another towering structure built by a king is also extolled, namely the one that stands on Pharos, the island that commands the harbour at Alexandria. The tower is said to have cost 800 talents. We should not fail to mention the generous

quid omittamus, Ptolemaei regis, quo in ea permiserit Sostrati Cnidii architecti structura ipsa nomen inscribi. usus eius nocturno navium cursu ignes ostendere ad praenuntianda vada portusque introitum, quales iam compluribus locis flagrant, sicut Ostiae ac Ravennae. periculum in continuatione ignium, ne sidus existimetur, quoniam e longinquo similis flammarum aspectus est. hic idem architectus primus omnium pensilem ambulationem Cnidi fecisse traditur.

84 XIX. Dicamus et labyrinthos, vel portentosissimum humani inpendii opus, sed non, ut existimari potest, falsum. durat etiam nunc in Aegypto in Heracleopolite nomo qui primus factus est ante annos, ut tradunt, $\overline{\text{III}}$ DC a Petesuchi rege sive Tithoe, quamquam Herodotus totum opus XII regum esse dicit novissimique Psammetichi. causas faciendi varie interpretantur, Demoteles regiam Moteridis fuisse, Lyceas sepulchrum Moeridis, plures Soli
85 sacrum id exstructum, quod maxime creditur. hinc utique sumpsisse Daedalum exemplar eius labyrinthi quem fecit in Creta non est dubium, sed centensimam tantum portionem eius imitatum, quae itinerum ambages occursusque ac recursus inexplicabiles con-

---

[a] Ptolemy Philadelphus built the Pharos in the first half of the 3rd century B.C. Its total height was about 400 feet, and much of it survived until the 13th century.

[b] Not identified. For the real author, see p. 68, n. [d].

[c] Perhaps the Palace of Minos at Cnossos, as seen in its ruined state.

spirit shown by King Ptolemy,[a] whereby he allowed the name of the architect, Sostratus of Cnidos, to be inscribed on the very fabric of the building. It serves, in connection with the movements of ships at night, to show a beacon so as to give warning of shoals and indicate the entrance to the harbour. Similar beacons now burn brightly in several places, for instance at Ostia and Ravenna. The danger lies in the uninterrupted burning of the beacon, in case it should be mistaken for a star, the appearance of the fire from a distance being similar. The same architect is said to have been the very first to build a promenade supported on piers: this he did at Cnidos.

Labyrinths.

XIX. We must mention also the labyrinths, quite the most abnormal achievement on which man has spent his resources, but by no means a fictitious one, as might well be supposed. One still exists in Egypt, in the nome of Heracleopolis. This, the first ever to be constructed, was built, according to tradition, 3600 years ago by King Petesuchis or King Tithoes,[b] although Herodotus attributes the whole work to the 'twelve kings,' the last of whom was Psammetichus. Various reasons are suggested for its construction. Demoteles supposes it to have been the palace of Moteris, and Lyceas the tomb of Moeris, while many writers state that it was erected as a temple to the Sun-god, and this is the general belief. Whatever the truth may be, there is no doubt that Daedalus adopted it as the model for the labyrinth built by him in Crete,[c] but that he reproduced only a hundredth part of it containing passages that wind, advance and retreat in a bewilderingly intricate manner. It is not just a narrow strip of

Hdt. ii. 148.

The Cretan Labyrinth.

tinet, non—ut in pavimentis puerorumve ludicris campestribus videmus—brevi lacinia milia passuum plura ambulationis continente,[1] sed crebris foribus inditis ad fallendos occursus redeundumque in errores
86 eosdem. secundus hic fuit ab Aegyptio labyrinthus, tertius in Lemno, quartus in Italia, omnes lapide polito fornicibus tecti, Aegyptius, quod miror equidem, introitu lapidibus [2] e Paro columnisque, reliqua [3] e syenite molibus compositis, quas dissolvere ne saecula quidem possint, adiuvantibus Heracleopolitis, quod opus invisum mire respectavere.[4]

87 Positionem operis eius singulasque partes enarrare non est, cum sit in regiones divisum atque praefecturas, quas vocant nomos, XXI [5] nominibus eorum totidem vastis domibus adtributis, praeterea templa omnium Aegypti deorum contineat superque Nemesis

[1] continente *coni. Mayhoff*: continentem *codd.*

[2] lapidibus *ego*: lapidis BRdT *Sillig, Mayhoff* (*num hoc est Latine loqui?*): lapide V (?).

[3] reliqua B: relique VdT: reliquis R(?)h.

[4] mire respectavere *ego*: mire spectavere B *Mayhoff*: mire infestavere Vd *Sillig*.

[5] XXI *Ianus*: XXL *cod.* B: XVI *ceteri codd.*

[a] Pliny is referring to the *Lusus Troiae*, the ceremonial 'ride' performed by boys in the Campus Martius. Virgil (*Aen.* V. 588 ff.) compares the manoeuvres to the Cretan labyrinth. Does Pliny imply that the course was marked out on the ground?

[b] This was really the exceptionally white limestone of Egypt, which Theophrastus (*de Lap.* 7) compares to Parian marble in its colour and solidity. *Cf.* XXXVI. 132.

[c] Or possibly 'the 21 names of the nomes each being allotted to a vast hall'; but the word-order is against this rendering.

[d] Nemesis is perhaps the Greek equivalent of Nemāre (or some such word), one of the names of Amenemhet III of

ground comprising many miles of 'walks' or 'rides,' such as we see exemplified in our tessellated floors or in the ceremonial game played by our boys in the Campus Martius,[a] but doors are let into the walls at frequent intervals to suggest deceptively the way ahead and to force the visitor to go back upon the very same tracks that he has already followed in his wanderings. This Cretan labyrinth was the next in succession after the Egyptian, and there was a third in Lemnos and a fourth in Italy, all alike being roofed with vaults of carefully worked stone. There is a feature of the Egyptian labyrinth which I for my part find surprising, namely an entrance and columns made of Parian marble.[b] The rest of the structure is of Aswan granite, the great blocks of which have been laid in such a way that even the lapse of centuries cannot destroy them. Their preservation has been aided by the people of Heracleopolis, who have shown remarkable respect for an achievement that they detest.

The Egyptian Labyrinth.

The ground-plan and the individual parts of this building cannot be fully described because it is divided among the regions or administrative districts known as nomes, of which there are 21, each having a vast hall allotted to it by name.[c] Besides these halls, it contains temples of all the Egyptian gods; and, furthermore, Nemesis[d] placed within the 40 shrines

Dynasty XII. The 'labyrinth,' at Hawara in the Fayûm, was his mortuary temple. Since he was associated with Lake Moeris (p. 60, n. [a]), Lyceas was not far wrong in supposing the labyrinth to be *sepulchrum Moeridis* (XXXVI. 84). Excavations have revealed that the temple was unusually large and complicated. It consisted of a series of halls or shrines arranged in rows.

XL [1] aediculis incluserit pyramides complures quadragenarum ulnarum senas radice ἀρούρας optinentes. fessi iam eundo [2] perveniunt ad viarum illum in-
88 explicabilem errorem, quin et cenacula clivis excelsa, porticusque descenduntur nonagenis gradibus; intus columnae [3] porphyrite lapide, deorum simulacra, regum statuae, monstrificae effigies. quarundam domuum talis est situs ut adaperientibus fores tonitrum intus terribile existat, maiore autem in parte transitus est per tenebras. aliae rursus extra murum labyrinthi aedificiorum moles; pteron appellant. inde aliae perfossis cuniculis subterraneae
89 domus. refecit unus omnino pauca ibi Chaeremon, spado Necthebis regis, D ante Alexandrum Magnum annis. id quoque traditur, fulsisse trabibus spinae oleo incoctae, dum in [4] fornices quadrati lapides adsurgerent.

90 Et de Cretico labyrintho satis dictum est. Lemnius similis illi columnis tantum CL memorabilior fuit, quarum in officina turbines ita librati pependerunt ut puero circumagente tornarentur. architecti fecere Zmilis [5] et Rhoecus et Theodorus indigenae. ex-

[1] XL *cod.* B: XI VRdh.
[2] eundo *edd.*: fundo BRdh.
[3] columnae *Urlichs*: columna de *cod.* h, *cod. Poll.*: columna BVRd.
[4] dum in *Mayhoff*: dum *codd.*
[5] Zmilis *Ianus*: Zmilus VRdh: milus B.

[a] An *arura* was roughly equivalent to a *iugerum* and was thus approximately two-thirds of an acre.
[b] Nectanebo II (Nekthoreb), the last Pharaoh. He reigned 360–343 B.C.: hence Urlichs reads L for D.
[c] Possibly another ruined palace, but it seems more likely that this is really the temple of Hera at Samos, the 'Samian labyrinth' mentioned earlier by Pliny (XXXIV. 83), with which Rhoecus and Theodorus, both natives of Samos, are known to have been concerned.

several pyramids, each with a height of 40 cubits and an area at the base of 4 acres.[a] It is when he is already exhausted with walking that the visitor reaches the bewildering maze of passages. Moreover, there are rooms in lofty upper storeys reached by inclines, and porches from which flights of 90 stairs lead down to the ground. Inside are columns of imperial porphyry, images of gods, statues of kings and figures of monsters. Some of the halls are laid out in such a way that when the doors open there is a terrifying rumble of thunder within: incidentally, most of the building has to be traversed in darkness. Again, there are other massive structures outside the wall of the labyrinth: the Greek term for these is 'pteron,' or a 'wing.' Then there are other halls that have been made by digging galleries underground. The few repairs that have been made there were carried out by one man alone, Chaeremon, the eunuch of King Necthebis,[b] 500 years before the time of Alexander the Great. There is a further tradition that he used beams of acacia boiled in oil to serve as supports while square blocks of stone were being lifted into the vaults. XIII. 63.

The Lemnian Labyrinth.

What has already been said must suffice for the Cretan labyrinth likewise. The Lemnian,[c] which was similar to it, was more noteworthy only in virtue of its 150 columns, the drums of which were so well balanced as they hung in the workshop that a child was able to turn them on the lathe. The architects were Zmilis, Rhoecus and Theodorus, all natives of XXXV. 152.

stantque adhuc reliquiae eius, cum Cretici Italicique
91 nulla vestigia exstent. namque et Italicum dici convenit, quem fecit sibi Porsina, rex Etruriae, sepulchri causa, simul ut externorum regum vanitas quoque Italis superetur. sed cum excedat omnia fabulositas, utemur ipsius M. Varronis in expositione ea[1] verbis: Sepultus sub urbe Clusio, in quo loco monimentum reliquit lapide quadrato quadratum, singula latera pedum trecenum,[2] alta quinquagenum. in qua basi quadrata intus labyrinthum inextricabile, quo si quis introierit sine glomere lini, exitum in-
92 venire nequeat. supra id quadratum pyramides stant quinque, quattuor in angulis et in medio una, imae latae pedum quinum septuagenum, altae centenum quinquagenum, ita fastigatae ut in summo orbis aeneus et petasus unus omnibus sit inpositus, ex quo pendeant exapta catenis tintinabula, quae vento agitata longe sonitus referant, ut Dodonae
93 olim factum. supra quem orbem quattuor pyramides insuper singulae stant altae pedum centenum. supra quas uno solo quinque pyramides. quarum altitudinem Varronem puduit adicere; fabulae Etruscae tradunt eandem fuisse quam totius operis ad eas, vesana dementia, quaesisse gloriam inpendio

[1] ea *Mayhoff*: ex *codd.*
[2] trecenum V: tricenum BRd *Sillig, Mayhoff.*

[a] According to Strabo (VII. frag. 3), there was a bronze bowl at Dodona, with a figure above it holding a whip. When the whip was moved by the wind it struck the bowl and made it ring like a bell.

Lemnos. There still exist remains of this labyrinth, although no traces of the Cretan or the Italian now survive. For it is appropriate to call 'Italian,' as well as 'Etruscan,' the labyrinth made by King Porsena of Etruria to serve as his tomb, with the result at the same time that even the vanity of foreign kings is surpassed by those of Italy. But since irresponsible story-telling here exceeds all bounds, I shall in describing the building make use of the very words of Marcus Varro himself: 'He is buried close to the city of Clusium, in a place where he has left a square monument built of squared blocks of stone, each side being 300 feet long and 50 feet high. Inside this square pedestal there is a tangled labyrinth, which no one must enter without a ball of thread if he is to find his way out. On this square pedestal stand five pyramids, four at the corners and one at the centre, each of them being 75 feet broad at the base and 150 feet high. They taper in such a manner that on top of the whole group there rests a single bronze disk together with a conical cupola, from which hang bells fastened with chains: when these are set in motion by the wind, their sound carries to a great distance, as was formerly the case at Dodona.[a] On this disk stand four more pyramids, each 100 feet high, and above these, on a single platform, five more.' The height of these last pyramids was a detail that Varro was ashamed to add to his account; but the Etruscan stories relate that it was equal to that of the whole work up to their level, insane folly as it was to have courted fame by spending for the benefit of none and to have ex-

The Italian Labyrinth.

116–28 B.C.

nulli profuturo, praeterea fatigasse regni vires, ut tamen laus maior artificis esset.

94 XX. Legitur et pensilis hortus, immo vero totum oppidum Aegyptiae Thebae, exercitus armatos subter[1] educere solitis regibus nullo oppidanorum sentiente; etiamnum hoc minus mirum quam quod flumine medium oppidum interfluente. quae si fuissent, non dubium est Homerum dicturum fuisse, cum centum portas ibi praedicaret.

95 XXI. Graecae magnificentiae vera admiratio exstat templum Ephesiae Dianae cxx[2] annis factum a tota Asia. in solo id palustri fecere, ne terrae motus sentiret aut hiatus timeret, rursus ne in lubrico atque instabili fundamenta tantae molis locarentur, calcatis ea substravere carbonibus, dein velleribus lanae. universo templo longitudo est ccccxxv pedum, latitudo ccxxv,[3] columnae cxxvii a singulis regibus factae lx pedum altitudine, ex iis xxxvi caelatae, una a Scopa. operi praefuit Chersiphron architectus.

96 summa miraculi epistylia tantae molis attolli potuisse;

[1] subter VRdT: sub terra B *Detlefsen.*
[2] CXX *cod.* BT: CCXX VRdh.
[3] CCXXV *cod.* B: CCXX *cod.* a: CXX VRdTh.

---

[a] Presumably the legend was inspired by one or other of the royal tombs. See *Journal of Hellenic Studies,* VI (1885), 207 ff., where a misguided attempt is made to reconstruct the building from Varro's description. Another unsuccessful solution appears in the *Journal of the British School at Athens,* XLVI (1951), 117 ff.

[b] Pliny is referring to Rome, likewise an *urbs pensilis* (XXXVI. 104), but resting on water-channels and sewers.

hausted furthermore the resources of a kingdom; and the result, after all, was more honour for the designer than for the sponsor.[a]

The hanging town, Thebes.

XX. We read also of a hanging garden, and, more than this, of a whole hanging town, Thebes in Egypt. The kings used to lead forth their armies in full array beneath it without being detected by any of the inhabitants. Even so, this is less remarkable than would have been the case had a river flowed through the middle of the town.[b] If any of this had been true, Homer would certainly have mentioned it when he spoke so emphatically of the hundred gates at Thebes. *Il.* IX, 381.

The Temple of Diana at Ephesus.

XXI. Of grandeur as conceived by the Greeks a real[c] and remarkable example still survives, namely the Temple of Diana at Ephesus, the building of which occupied all Asia Minor for 120 years. It was built on marshy soil so that it might not be subject to earthquakes or be threatened by subsidences. On the other hand, to ensure that the foundations of so massive a building would not be laid on shifting, unstable ground, they were underpinned with a layer of closely trodden charcoal, and then with another of sheepskins with their fleeces unshorn. The length of the temple overall is 425 feet, and its breadth 225 feet. There are 127 columns, each constructed by a different king and 60 feet in height. Of these, 36 were carved with reliefs, one of them by Scopas. The architect in charge of the work was Chersiphron. The crowning marvel was his success

The 'hanging town' may have been inspired by the vast hypostyle halls of the temples at Karnak and Luxor.

[c] Real, as opposed to the legendary marvels just described.

id consecutus ille est aeronibus harenae plenis, molli clivo super capita columnarum exaggerato, paulatim exinaniens imos ut sensim opus in loco sederet. difficillime hoc contigit in limine ipso quod foribus inponebat; etenim ea maxima moles fuit nec sedit in cubili, anxio artifice mortis destinatione suprema.

97 tradunt in ea cogitatione fessum nocturno tempore in quiete vidisse praesentem deam cui templum fieret hortantem ut viveret: se composuisse lapidem. atque ita postera luce apparuit; pondere ipso correctus videbatur. cetera eius operis ornamenta plurium librorum instar optinent, nihil ad specimen naturae pertinentia.

98 XXII. Durat et Cyzici delubrum, in quo tubulum [1] aureum commissuris omnibus politi lapidis subiecit artifex, eboreum Iovem dicaturus intus coronante eum marmoreo Apolline. translucent ergo iuncturae

[1] tubulum *ego*: milium B: millum *Mayhoff*: filum h *Sillig*: in illud *aut* illud *aut* illut *aut* illum *ceteri codd.*

[a] Possibly 'such massive architraves.'

[b] A *locus desperatus*. *Filum*, read by *cod.* h and the old editors, has little authority; and a thread would not allow light to penetrate through a joint (*translucent*). We should expect *relucent*. Since, moreover, it would not allow air to penetrate, *afflatu simulacra refovent* must be twisted into meaning 're-animate the statues with a glow,' a rendering unparalleled both for *afflatus* and for *refovere*. Slender gold pipes would have allowed streaks of light to enter. They could also have allowed a refreshing breeze to reach the statues, thus enabling us to take *afflatu, etc.*, in the proper sense. But probably there was misunderstanding on Pliny's part or misrepresentation on the part of his original source. The device may have been merely one or more fine-meshed gilded grilles inserted within the *cella* wall at such a height that they could not be seen from the ground.

in lifting the architraves of this massive building [a] into place. This he achieved by filling bags of plaited reed with sand and constructing a gently graded ramp which reached the upper surfaces of the capitals of the columns. Then, little by little, he emptied the lowest layer of bags, so that the fabric gradually settled into its right position. But the greatest difficulty was encountered with the lintel itself when he was trying to place it over the door; for this was the largest block, and it would not settle on its bed. The architect was in anguish as he debated whether suicide should be his final decision. The story goes that in the course of his reflections he became weary, and that while he slept at night he saw before him the goddess for whom the temple was being built: she was urging him to live because, as she said, she herself had laid the stone. And on the next day this was seen to be the case. The stone appeared to have been adjusted merely by dint of its own weight. The other embellishments of the building are enough to fill many volumes, since they are in no way related to natural forms.

Curiosities of Cyzicus.

XXII. At Cyzicus too there survives a temple; and here a small gold tube [b] was inserted into every vertical joint of the dressed stonework by the architect, who was to place within the shrine an ivory statue of Jupiter with a marble Apollo crowning him. Consequently very fine filaments of light

tenuissimis capillamentis lenique adflatu simulacra refovent, et praeter ingenium artificis ipsa materia ingenii quamvis occulta in pretio operis intellegitur.

99 XXIII. Eodem in oppido est lapis fugitivus appellatus; Argonautae eum pro ancora usi reliquerant ibi. hunc e prytaneo—ita vocatur locus—saepe profugum vinxere plumbo. eadem in urbe iuxta portam quae Thracia [1] vocatur turres septem acceptas voces numeroso repercussu multiplicant. nomen
100 huic miraculo Echo est a Graecis datum. et hoc quidem locorum natura evenit ac plerumque convallium; ibi casu accidit, Olympiae autem arte, mirabili modo, in porticu, quam ob id heptaphonon appellant, quoniam septiens eadem vox redditur. Cyzici et buleuterium vocant aedificium amplum, sine ferreo clavo ita disposita contignatione ut eximantur trabes sine fulturis ac reponantur. quod item Romae in ponte sublicio religiosum est, posteaquam Coclite Horatio defendente aegre revolsus est.

101 XXIV. Verum et ad urbis nostrae miracula transire conveniat DCCCque [2] annorum dociles scrutari vires et

[1] Thracia R *edd.*: trachia dT: tracia BFa.
[2] DCCCque BR: nongentorumque dh *edd. vett.*

---

[a] The oldest of the bridges crossing the Tiber at Rome. *Sublica* means 'a pile.'

shine through the interstices and a gentle refreshing breeze plays on the statues. Apart from the ingenuity of the architect, the very material of his device, hidden though it may be, is appreciated as enhancing the value of the whole work.

XXIII. In the same city is the so-called Runaway Stone, which the Argonauts used as an anchor and left there. This has frequently strayed from the Presidents' House (this being the name of the place where it is kept), and so it has been fastened with lead. In this city too, close to the so-called Thracian Gate, there are seven towers that repeat with numerous reverberations any sounds that strike upon them. The Greek term for this remarkable phenomenon is 'Echo.' It is caused of course by the configuration of the landscape and generally of deep valleys; but at Cyzicus it occurs by pure chance, while at Olympia it is produced artificially in a remarkable manner within the portico known as 'The Seven Voices,' so called because the same sound re-echoes seven times. At Cyzicus, moreover, there is a large building called the Council House, the rafters of which have no iron nails and are so arranged that beams can be removed and replaced without scaffolding. This is the case also with the Sublician Bridge [a] in Rome, where there has been a solemn ban on the use of nails ever since it was torn down with such difficulty while Horatius Cocles was defending it.

The buildings of Rome.

XXIV. But this is indeed the moment for us to pass on to the wonders of our own city, to review the resources derived from the experiences of 800 years, and to show that here too in our buildings we have

sic quoque terrarum orbem victum ostendere. quod accidisse totiens paene, quot referentur miracula, apparebit; universitate vero acervata et in quendam unum cumulum coiecta non alia magnitudo exurget[1] quam si mundus alius quidam in uno loco narretur.
102 nec ut[2] circum maximum a Caesare dictatore exstructum longitudine stadiorum trium, latitudine unius, sed cum aedificiis iugerum quaternum, ad sedem $\overline{\text{CCL}}$, inter magna opera dicamus: non inter magnifica basilicam Pauli columnis e Phrygibus mirabilem forumque divi Augusti et templum Pacis Vespasiani Imp. Aug., pulcherrima operum quae umquam vidit orbis? non et[3] tectum diribitori[4] ab Agrippa facti,[5] cum theatrum ante texerit Romae
103 Valerius Ostiensis architectus ludis Libonis? pyramidas regum miramur, cum solum tantum foro exstruendo HS |M|[6] Caesar dictator emerit et, si quem inpensa[7] moveat[8] captis avaritia animis, HS |CXLVIII|[9]

[1] exurget B: exurgit F: exsurgit RdTa.
[2] nec ut FdTa: ne ut B: ne vel (et) *coni. Mayhoff.*
[3] et *Sillig*: ut B (vidit . . . tectum *om. ceteri codd.*).
[4] diribitori *Sillig* (*e coni. Iani*): dilibitori B: ultori Rd.
[5] facti R: factis B: factum dh.
[6] |M| *Ianus*: M *cod.* B: millies d(?): milies *Sillig.*
[7] inpensa BF *Urlichs*: inpensae Rdh *Sillig.*
[8] moveat *Mayhoff*: movent *codd.*
[9] |CXLVIII| *cod.* B: $\overline{\text{CXLVIII}}$ *Sillig.*

[a] It is uncertain how far Julius Caesar was responsible for the final form of the Circus Maximus.

[b] The Basilica Aemilia on the N. side of the Forum was perhaps built in 179 B.C. and was frequently restored in later times. The columns of marble from Synnada in Phrygia belonged to one of several restorations. This white marble has crimson or purple markings.

vanquished the world; and the frequency of this occurrence will be proved to match within a little the number of marvels that we shall describe. If we imagine the whole agglomeration of our buildings massed together and placed on one great heap, we shall see such grandeur towering above us as to make us think that some other world were being described, all concentrated in one single place. Even if we are not to include among our great achievements the Circus Maximus built by Julius Caesar,[a] three furlongs in length and one in breadth, but with nearly three acres of buildings and seats for 250,000, should we not mention among our truly noble buildings the Basilica of Paulus,[b] so remarkable for its columns from Phrygia, or the Forum of Augustus[c] of Revered Memory or the Temple of Peace[d] built by his Imperial Majesty the Emperor Vespasian, buildings the most beautiful the world has ever seen? Should we not mention also the roof of Agrippa's Ballot Office,[e] although at Rome long before this the architect
Valerius of Ostia had roofed a whole theatre for 63 B.C.
Libo's games? We admire the pyramids of kings
when Julius Caesar gave 100,000,000 sesterces merely 54 B.C.
for the ground on which his forum was to be built,
and Clodius, who was killed by Milo, paid 14,800,000 52 B.C.

[c] His Forum, containing the temple of Mars Ultor, was dedicated in 2 B.C.

[d] The Temple of Peace, surrounded by the Forum Vespasiani, was dedicated in A.D. 75.

[e] This building, with a roof of exceptionally wide span (XVI. 201), was finished by Augustus in 7 B.C. Votes cast in elections were counted here by the *diribitores.*

domo empta Clodius, quem Milo occidit, habitaverit.
104 quod equidem non secus ac regum insaniam miror; itaque et ipsum Milonem HS |DCC|[1] aeris alieni debuisse inter prodigia animi humani duco.[2] sed tum senes aggeris vastum spatium, substructiones Capitolii mirabantur, praeterea cloacas, opus omnium dictu maximum, subfossis montibus atque, ut paullo ante retulimus, urbe pensili subterque navigata
105 M. Agrippae in aedilitate post consulatum. permeant conrivati septem amnes cursuque praecipiti torrentium modo rapere atque auferre omnia coacti, insuper imbrium mole concitati vada ac latera quatiunt, aliquando Tiberis retro infusus recipitur, pugnantque diversi aquarum impetus intus, et tamen
106 obnixa firmitas resistit. trahuntur moles superne[3] tantae non succumbentibus cavis[4] operis, pulsant ruinae sponte praecipites aut inpactae incendiis, quatitur solum terrae motibus, durant tamen a Tarquinio Prisco annis DCC prope inexpugnabiles, non

[1] HS |DCC| *Detlefsen*: H. $\overline{\text{DCC}}$ *cod.* B.
[2] duco RFdh: dico Ba.
[3] superne *Ianus*: supernae B: internae *ceteri codd.*
[4] cavis *Reines*: cautis B: causis *ceteri codd.*

[a] In its N.E. sector, from the Colline Gate to the Esquiline Gate, the Servian Wall was strengthened with a large earth rampart.

[b] Possibly 'beneath which Marcus Agrippa travelled by boat' if *M. Agrippae* is taken as a dative of the agent with *navigata*. But this rendering is less effective.

[c] In 33 B.C. the Cloaca Maxima was cleaned, and Agrippa as aedile inspected it from a boat.

sesterces (if references to expenditure can impress anyone now that miserliness has become an obsession) just for the house in which he lived. This amazes me for my part just as much as the mad schemes of kings; and therefore I regard the fact that Milo himself incurred debts amounting to 70,000,000 sesterces as one of the oddest manifestations of the human character. But at that time elderly men still admired the vast dimensions of the Rampart,[a] the substructures of the Capitol and, furthermore, the city sewers, the most noteworthy achievement of all, *The Cloaca Maxima and its branches.* seeing that hills were tunnelled and Rome, as we mentioned a little earlier, became a 'hanging' city, § 94. beneath which men travelled in boats[b] during Marcus Agrippa's term as aedile after his consulship.[c] Through the city there flow seven rivers meeting in one channel. These, rushing downwards like mountain torrents, are constrained to sweep away and remove everything in their path, and when they are thrust forward by an additional volume of rain water they batter the bottom and sides of the sewers. Sometimes the backwash of the Tiber floods the sewers and makes its way along them upstream. Then the raging flood waters meet head on within the sewers, and even so the unyielding strength of the fabric resists the strain. In the streets above, massive blocks of stone are dragged along, and yet the tunnels do not cave in. They are pounded by falling buildings, which collapse of their own accord or are brought crashing to the ground by fire. The ground is shaken by earth tremors; but in spite of all, for 700 years from the time of Tarquinius Priscus, the channels 616–579 B.C. have remained well-nigh impregnable. We should

omittendo memorabili exemplo vel magis, quoniam
107 celeberrimis rerum conditoribus omissum est. cum id opus Tarquinius Priscus plebis manibus faceret, essetque labor incertum maior an longior,[1] passim conscita nece Quiritibus taedium fugientibus, novum, inexcogitatum ante posteaque remedium invenit ille rex, ut omnium ita defunctorum corpora figeret cruci spectanda civibus simul et feris volucribusque
108 laceranda. quam ob rem pudor Romani nominis proprius, qui saepe res perditas servavit in proeliis, tunc quoque subvenit, sed illo tempore inposuit iam erubescentibus,[2] cum puderet vivos, tamquam puditurum esset extinctos. amplitudinem cavis eam fecisse proditur, ut vehem faeni large onustam transmitteret.

109 Parva sunt cuncta quae diximus, et omnia uni comparanda miraculo, antequam nova attingam. M. Lepido Q. Catulo cos., ut constat inter diligentissimos auctores, domus pulchrior non fuit Romae quam Lepidi ipsius, at, Hercules, intra annos xxxv eadem
110 centensimum locum non optinuit.[3] computet in hac aestimatione qui volet marmorum molem, opera

[1] maior an longior Ba: an longior Rd: longior an periculosior h, *cod. Poll.*, *edd. vett.*

[2] inposuit iam erubescentibus *ego*: inposuit iam erubescens dTh: in post vitam erubescens (vi *pro* in *Mayhoff*) B *Mayhoff*.

[3] optinuit Ba: continuit *ceteri codd.*

---

[a] An exaggeration, but one sector is 4·2 metres high and 3·2 wide. No part of the existing structure seems to be older than the 3rd century B.C.

not fail to mention an occasion that is all the more worthy of record because the best-known historians have overlooked it. Tarquinius Priscus was carrying out the work using the common folk as his labourers, and it became doubtful whether the toil was to be more notable for its intensity or for its duration. Since the citizens were seeking to escape from their exhaustion by committing suicide wholesale, the king devised a strange remedy that was never contrived except on that one occasion. He crucified the bodies of all who had died by their own hands, leaving them to be gazed at by their fellow-citizens and also torn to pieces by beasts and birds of prey. Consequently, the sense of shame, which is so characteristic of the Romans as a nation and has so often restored a desperate situation on the battlefield, then too came to their aid; but this time it imposed upon them at the very moment when they blushed for their honour, since they felt ashamed while alive under the illusion that they would feel equally ashamed when dead. Tarquin is said to have made the tunnels large enough to allow the passage of a waggon fully loaded with hay.[a]

The works that we have so far mentioned amount in all to little; and before we touch upon fresh topics we will show that just one marvel by itself bears comparison with them all. Our most scrupulous authorities are agreed that in the consulship of Marcus
Lepidus and Quintus Catulus as fine a house as any 78 B.C.
in Rome was that of Lepidus himself; but, I swear, within 35 years the same house was not among the first hundred. Confronted by this assessment, anyone who so wishes may count the cost of the masses

pictorum, inpendia regalia et cum pulcherrima laudatissimaque certantes centum domus posteaque ab innumerabilibus aliis in hunc diem victas. profecto incendia puniunt luxum, nec tamen effici potest ut mores aliquid ipso homine mortalius esse intellegant.

111 Sed omnes eas duae domus vicerunt. bis vidimus urbem totam cingi domibus principum Gai et Neronis, huius quidem, ne quid deesset,[1] aurea. nimirum sic habitaverant illi qui hoc imperium fecere tantum, ad devincendas gentes triumphosque referendos ab aratro aut foco exeuntes, quorum agri quoque minorem modum optinuere quam sellaria istorum!

112 subit vero [2] cogitatio, quota portio harum fuerint areae illae quas invictis imperatoribus decernebant publice ad exaedificandas [3] domos; summusque illarum honos erat, sicut in P. Valerio Publicola, primo consule cum L. Bruto, post tot merita et fratre eius, qui bis in eodem magistratu Sabinos devicerat, adici decreto ut domus eorum fores extra aperirentur

[1] deesset *edd.*: esset *aut* esse *codd.*

[2] subit vero *edd. vett., Mayhoff*: subiit vero B: subituquo d: subituque R; *unde* subit utique *coni. Mayhoff.*

[3] exaedificandas B: aedificandas RdTh.

[a] Gaius (A.D. 37–41) extended the palace of Tiberius towards the Forum, where the Temple of Castor and Pollux was included so as to form part of the main entrance. The *Domus*

of marble, the paintings, the regal budgets, the cost, in fact, of a hundred houses, each of which rivalled one that had been the finest and the most highly appreciated in its time, houses that were themselves to be surpassed by countless others right up to the present day. Fires, we may be sure, are punishments inflicted upon us for our extravagance; and even so, human nature cannot be made to understand that there are things more mortal than man himself.

However, all these houses were surpassed by two. Twice have we seen the whole city girdled by imperial palaces, those of Gaius and Nero, the latter's palace, to crown all, being indeed a House of Gold.[a] Such, doubtless, were the dwellings of those who made this empire great, who went straight from plough or hearth to conquer nations and win triumphs, whose very lands occupied a smaller space than those emperors' sitting-rooms! Indeed, one begins to reflect how small in comparison with those palaces were the building-sites formally granted by the state to invincible generals for their private houses. The highest distinction that these houses displayed was one accorded, for example, after his many services to Publius Valerius Publicola, the first of our consuls 509 B.C.
along with Lucius Brutus, and to his brother, who—also as consul—inflicted two crushing defeats on the Sabines. I refer to the additional decree which provided that the doors of their houses should be made to open outwards so that the portals could be flung open on to the public highway. This was the

Aurea, in which *cuncta auro lita . . . erant* (Suetonius, *Nero*, 31), was a vast range of buildings extending from the Palatine to the Esquiline built by Nero after the fire of A.D. 64.

et ianua in publicum reiceretur. hoc erat claris-
simum insigne inter triumphales quoque domos.
113 Non patiar istos duos Gaios vel duos Nerones [1]
ne hac quidem gloria famae frui, docebimusque
etiam insaniam eorum victam privatis opibus [2] M.
Scauri, cuius nescio an aedilitas maxime prostraverit
mores maiusque sit Sullae malum tanta privigni
114 potentia quam proscriptio tot milium. in aedilitate
hic sua fecit opus maximum omnium quae umquam
fuere humana manu facta, non temporaria mora,
verum etiam aeternitatis destinatione. theatrum
hoc fuit; scaena ei triplex in altitudinem CCCLX
columnarum in ea civitate quae sex Hymettias non
tulerat sine probro civis amplissimi. ima pars
scaenae e marmore fuit, media e vitro, inaudito etiam
postea genere luxuriae, summa e tabulis inauratis;
columnae, ut diximus, imae duodequadragenum
115 pedum. signa aerea inter columnas, ut indicavimus,
fuerunt $\overline{\text{III}}$ numero; cavea ipsa cepit hominum $\overline{\text{LXXX}}$,
cum Pompeiani theatri totiens multiplicata urbe
tantoque maiore populo sufficiat large $\overline{\text{XXXX}}$ sedere.[3]
relicus apparatus tantus Attalica veste, tabulis pictis,

[1] duos Gaios vel duos Nerones Rdh *Sillig*: duos Nerones B: duos *Ianus*, *Mayhoff*.
[2] opibus Bh: operibus Rd.
[3] sedere *codd.*: sedi *Hermolaus Barbarus*, *Urlichs*: sede *Ianus*, *coll.* § *102*.

---

[a] Lit. 'the great power of the stepson,' *i.e.* Scaurus.
[b] 'Attalic' fabrics were interwoven with gold thread (VIII. 196).

most notable mark of distinction in the houses even
of men who had celebrated a triumph.

I shall not allow these two birds of a feather, two *Scaurus' temporary theatre.*
Gaiuses or two Neros as you please, to enjoy
unchallenged even renown such as this; and so I
shall show that even their madness was outdone by
the resources of a private individual, Marcus Scaurus,
whose aedileship may perhaps have done more than 58 B.C.
anything to undermine morality, and whose powerful
ascendancy [a] may have been a more mischievous
achievement on the part of his stepfather Sulla than
the killing by proscription of so many thousands of
people. As aedile he constructed the greatest of all
the works ever made by man, a work that surpassed
not merely those erected for a limited period but
even those intended to last for ever. This was his
theatre, which had a stage arranged in three storeys
with 360 columns; and this, if you please, in a com-
munity that had not tolerated the presence of six
columns of Hymettus marble without reviling a § 7.
leading citizen. The lowest storey of the stage was
of marble, and the middle one of glass (an extrava-
gance unparalleled even in later times), while the
top storey was made of gilded planks. The columns
of the lowest storey were, as I have stated, each 38 § 6.
feet high. The bronze statues in the spaces between
the columns numbered 3000, as I mentioned earlier. XXXIV. 36.
As for the auditorium, it accommodated 80,000; and
yet that of Pompey's theatre amply meets all require- § 41.
ments with seats for 40,000 even though the city is
so many times larger and the population so much
more numerous than it was at that time. The rest
of the equipment, with dresses of cloth of gold,[b] scene

cetero choragio[1] fuit ut, in Tusculanam villam reportatis quae superfluebant cotidiani usus deliciis, incensa villa ab iratis servis concremaretur HS |CCC|.[2]

116 Aufert animum et a destinato itinere degredi[3] cogit contemplatio tam prodigae mentis aliamque conectit maiorem insaniam e ligno. C. Curio, qui bello civili in Caesarianis partibus obiit, funebri patris munere cum opibus apparatuque non posset superare Scaurum—unde enim illi vitricus Sulla et Metella mater proscriptionum sectrix? unde M. Scaurus pater, totiens princeps civitatis et Mariani sodalicii rapinarum provincialium sinus? cum iam ne ipse quidem Scaurus sibi par esse posset, quando hoc certe incendi illius praemium habuit convectis ex orbe terrarum rebus, ut nemo postea par esset

117 insaniae illi—ingenio ergo[4] utendum suo Curioni et aliquid excogitandum fuit. operae pretium est scire quid invenerit, et gaudere moribus nostris ac verso[5] modo nos vocare maiores. theatra iuxta duo

1 choragio *Budé*: chora B: corago Rd.
2 |CCC| *Ianus, Mayhoff*: CCC *cod.* B: $\overline{CCC}$ *Sillig.*
3 degredi B[1]: digredi B[2] *edd. vett., Sillig.*
4 ergo BT: erat *aliquot codd.*
5 verso B: nostro Rd *edd. vett.*: vestrum F.

[a] He was killed in 49 B.C. while fighting against Juba in Africa.

[b] *I.e. maiores.* Compared with men like Scaurus and Curio, Pliny and his contemporaries live like the men of old. Therefore in relation to them they are *maiores* in respect of morality, but *minores* ('younger') in point of time.

paintings and other properties was on so lavish a scale that when the surplus knick-knacks that could be put to ordinary use were taken to Scaurus' villa at Tusculum and the villa itself set on fire and burnt down by the indignant servants, the loss was estimated at 30,000,000 sesterces.

Thoughts of this wasteful behaviour distract our attention and force us to leave our intended course, since with this theatre they cause us to associate another, even more frenzied, fantasy in wood. Gaius Curio, who died during the Civil War while fighting on Caesar's side,[a] could not hope, in the entertainment which he provided in honour of his father's funeral, to outstrip Scaurus in the matter of costly embellishments. For where was he to find a stepfather like Sulla or a mother like Metella, who speculated by buying up the property of the proscribed, or a father like Marcus Scaurus, who was for so long a leader in the government and acted for Marius and his cronies as their receiver of goods plundered from the provinces? Even Scaurus himself could no longer have matched his own achievement, for since he had collected his material from all parts of the world, he gained at any rate one advantage from that fire, namely that it was impossible in the future for anyone to emulate his madness. Curio, therefore, had to use his wits and devise some ingenious scheme. It is worth our while to be acquainted with his discovery, and so to be thankful for our modern code of morality and call ourselves 'elders and betters,'[b] reversing the usual meaning of the term. He built close to each other two very large wooden theatres, each poised and

Curio's theatres.

52 B.C.

§ 115.

fecit amplissima[1] ligno, cardinum singulorum versatili suspensa libramento, in quibus utrisque antemeridiano ludorum spectaculo edito inter sese aversis, ne invicem obstreperent scaenae, repente circumactis—ut constat,[2] post primos[3] dies etiam sedentibus aliquis[4]—cornibus in se coeuntibus faciebat amphitheatrum gladiatorumque proelia edebat, ipsum magis auctoratum populum Romanum circum-
118 ferens. quid enim miretur quisque in hoc primum, inventorem an inventum, artificem an auctorem, ausum aliquem hoc excogitare an suscipere an iubere?[5] super omnia erit populi sedere ausi furor tam infida instabilique sede. en hic est ille terrarum victor et totius domitor orbis, qui gentes, regna diribet,[6] iura exteris mittit, deorum quaedam immortalium generi humano portio, in machina pendens
119 et ad periculum suum plaudens! quae vilitas animarum ista aut quae querela de Cannis! quantum mali potuit accidere! hauriri urbes terrae hiatibus publicus mortalium dolor est: ecce populus Romanus

[1] amplissima B: amplissime F: amplissima e Rdh.
[2] constat BFdh: contra stat R: contra starent *Hermolaus Barbarus, Sillig.*
[3] post primos B: postremos R: postremo h, *cod. Poll. edd. vett., Sillig.*
[4] dies etiam sedentibus aliquis BdT (die . . . aliquibus h, *cod. Poll.*): iam die discedentibus tabulis *edd. vett., Sillig.*
[5] an iubere BRdh: parere an iubere *edd. vett., Sillig.*
[6] diribet B¹: diriget B²: diriperet Rdh.

balanced on a revolving pivot. During the forenoon, a performance of a play was given in both of them and they faced in opposite directions so that the two casts should not drown each other's words. Then all of a sudden the theatres revolved (and it is agreed that after the first few days they did so with some of the spectators actually remaining in their seats), their corners met,[a] and thus Curio provided an amphitheatre in which he produced fights between gladiators, though they were less in chancery than the Roman people itself as it was whirled around by Curio. Truly, what should first astonish one in this, the inventor or the invention, the designer or the sponsor, the fact that a man dared to plan the work, or to undertake it, or to commission it? What will prove to be more amazing than anything is the madness of a people that was bold enough to take its place in such treacherous, rickety seats. Here we have the nation that has conquered the earth, that has subdued the whole world, that distributes tribes and kingdoms, that despatches its dictates to foreign peoples, that is heaven's representative, so to speak, among mankind, swaying on a contraption and applauding its own danger! What a contempt for life this showed! What force now have our complaints of the lives lost at Cannae! What a disaster it could 216 B.C.
have been! When the earth yawns and cities are engulfed, whole communities grieve. Here the entire Roman people, as if on board two frail boats,

[a] A geometrical impossibility: there must have been a gap between the two theatres when they faced each other. Possibly the gap was filled by inserting sections of movable flooring.

universus, veluti duobus navigiis inpositus, binis cardinibus sustinetur et se ipsum depugnantem spectat, periturus momento aliquo luxatis machinis!
120 et per hoc quaeritur tribuniciis contionibus gratia, ut pensiles tribus quatiat, in rostris quid non ausurus apud eos quibus hoc persuaserit! vere namque confitentibus populus Romanus funebri munere ad tumulum patris eius depugnavit universus. variavit hanc suam magnificentiam fessis turbatisque cardinibus et amphitheatri forma custodita novissimo die diversis duabus per medium scaenis athletas edidit raptisque e contrario repente pulpitis eodem die victores e gladiatoribus suis produxit. nec fuit rex Curio aut gentium imperator, non opibus insignis, ut qui nihil in censu habuerit praeter discordiam principum.

121 Sed dicantur vera aestimatione invicta miracula. Q. Marcius Rex, iussus a senatu aquarum Appiae, Anienis, Tepulae ductus reficere, novam a nomine suo

---

[a] As he had already caused them to shake and sway in his theatres.

[b] Curio was originally an optimate, but when he became tribune in 50 B.C., Caesar purchased his support with a very large bribe. As tribune he served Caesar well by vetoing measures intended to favour Pompey, and proposing others for Caesar's benefit.

[c] The first Roman aqueduct, built by Appius Claudius Caecus in 312 B.C.

[d] Begun in 272 B.C. and known as Anio Vetus after the building of the Anio Novus (see XXXVI. 122, below).

was supported by a couple of pivots, and was entertained with the spectacle of its very self risking its life in the fighting arena, doomed, as it was, to perish at some moment or other if the framework were wrenched out of place. And the aim, after all, was merely to win favour for the speeches that Curio would make as tribune, so that he might con- 50 B.C. tinue to agitate the swaying voters,[a] since on the speaker's platform he would shrink from nothing in addressing men whom he had persuaded to submit to such treatment. For, if we must confess the truth, it was the whole Roman people that struggled for its life in the arena at the funeral games held at his father's tomb. When the pivots of the theatres were worn and displaced he altered this ostentatious display of his. He kept to the shape of the amphitheatre, and on the final day gave athletic displays on the two stages as they stood back to back across the middle of the arena. Then suddenly the platforms were swept away on either side, and during the same day he brought on those of his gladiators who had won their earlier contests. And Curio was not a king nor an emperor nor, indeed, was he particularly rich, seeing that his only financial asset was the feud that had arisen between the heads of state.[b]

The aqueducts of Rome.

But we must go on to describe marvels which are unsurpassed in virtue of their genuine value. Quintus Marcius Rex, having been ordered by the senate to repair the conduits of the Aqua Appia,[c] the Anio,[d] and the Tepula,[e] drove underground passages through the mountains and brought to Rome a new

[e] The Tepula was constructed in 127 B.C. and could not have been repaired by Marcius Rex in 144 B.C.

appellatam cuniculis per montes actis intra praeturae suae tempus adduxit; Agrippa vero in aedilitate adiecta Virgine aqua ceterisque conrivatis atque emendatis lacus DCC fecit, praeterea salientes [1] D,[2] castella CXXX, complura et cultu magnifica, operibus iis signa CCC aerea aut marmorea inposuit, columnas e marmore CCCC, eaque omnia annuo spatio. adicit ipse aedilitatis suae conmemoratione et ludos diebus undesexaginta factos et gratuita praebita balinea CLXX, quae nunc Romae ad infinitum auxere
122 numerum. vicit antecedentes aquarum ductus novissimum inpendium operis incohati a C. Caesare et peracti a Claudio, quippe a XXXX lapide ad eam excelsitatem, ut omnes urbis montes lavarentur, influxere Curtius atque Caeruleus fontes et Anien
123 novus,[3] erogatis [4] in id opus HS [$\overline{MMMD}$].[5] quod si quis diligentius aestumaverit abundantiam aquarum in publico, balineis, piscinis, euripis, domibus, hortis,

[1] salientes *Budé*: psallentes B: sapientes *aut* sapientis *ceteri codd.*

[2] D *cod.* B: cui Fh: CVI *cod.* R.

[3] novus *Brotier*: novos *codd.*

[4] erogatis *Detlefsen*: erogatos B: erogata *aut* erogat *ceteri codd.*: erogatum *Gelen.*

[5] [$\overline{MMMD}$] *Ianus*: [$\overline{MMM}$] D *cod.* B, *Mayhoff*: $\overline{MMMD}$ *Sillig.*

---

[a] Marcius Rex was praetor in 144 and 143 B.C., his term of office being extended to enable him to complete the Aqua Marcia. It passed underground through the Sabine Hills in the neighbourhood of Tivoli.

[b] Completed in 19 B.C. and wrongly associated by Pliny with the works undertaken by Agrippa as aedile in 33 B.C.

[c] Presumably *cippi* marking the course taken by the channels.

[d] These two springs fed the Aqua Claudia, which, like the

water-supply called by his own name and completed within the period of his praetorship.[a] Agrippa, moreover, as aedile added to these the Aqua Virgo,[b] repaired the channels of the others and put them in order, and constructed 700 basins, not to speak of 500 fountains and 130 distribution-reservoirs, many of the latter being richly decorated. He erected on these works 300 bronze or marble statues and 400 marble pillars;[c] and all of this he carried out in a year. He himself in the memoirs of his aedileship adds that in celebration games lasting for 59 days were held, and the bathing establishments were thrown open to the public free of charge, all 170 of them, a number which at Rome has now been infinitely increased. But all previous aqueducts have been surpassed by the most recent and very costly work inaugurated by the Emperor Gaius and completed by Claudius, inasmuch as the Curtian and Caerulean Springs,[d] as well as the Anio Novus, were made to flow into Rome from the 40th milestone [e] at such a high level as to supply water to all the seven hills of the city, the sum spent on the work amounting to 350,000,000 sesterces. If we take into careful consideration the abundant supplies of water in public buildings, baths, pools,[f] open channels, private houses,

XXXI. 41. XXXI. 42. Dio Cassius, XLIX. 43. A.D. 37–41. A.D. 41–54.

Anio Novus, was begun by Gaius Caligula in A.D. 38 and completed by Claudius in A.D. 52.

[e] *I.e.*, the 40th milestone on the Via Sublacensis, which ran up the valley of the Anio. The aqueducts, of course, took a far more circuitous route so as to maintain a gentle gradient.

[f] *Piscina* is used of fish-ponds and bathing pools. It is just possible, though in this context hardly likely, that Pliny is using the word in the strictly technical sense of 'settling-tanks' (see Frontinus, *De Aquae Ductu*, passim).

suburbanis villis, spatia aquae[1] venientis, exstructos arcus, montes perfossos, convalles aequatas, fatebitur nil magis mirandum fuisse in toto orbe terrarum.
124 Eiusdem Claudi inter maxime[2] memoranda equidem duxerim, quamvis destitutum successoris odio, montem perfossum ad lacum Fucinum emittendum inenarrabili profecto impendio et operarum multitudine per tot annos, cum aut conrivatio aquarum, qua terrenus mons erat, egereretur in verticem machinis aut silex caederetur quantaque[3] intus in tenebris fierent, quae neque concipi animo nisi ab iis qui videre neque enarrari humano sermone
125 possunt! nam portus Ostiensis opus praetereo, item vias per montes excisas, mare Tyrrhenum a Lucrino molibus seclusum, tot pontes tantis inpendiis factos. et inter plurima alia Italiae ipsius miracula marmora in lapicidinis crescere auctor est Papirius Fabianus, naturae rerum peritissimus, exemptores quoque ad-

[1] spatia aquae *Mayhoff*: spatia quae F: spatiaque dTh: spatia B *Sillig.*
[2] maxime *Gelen*: maxima *codd.*
[3] quantaque B: omniaque Rdh.

---

[a] The channel was intended to carry the waters of the Fucine Lake, a large lake in Central Italy, into the River Liris. The work, opened by Claudius with great ceremony in A.D. 52, was a failure. Later modifications were only a partial success. Claudius employed 30,000 men for 11 years on the project.

[b] This was the usual method, employed, for example, in

gardens and country estates near the city; if we consider the distances traversed by the water before it arrives, the raising of arches, the tunnelling of mountains and the building of level routes across deep valleys, we shall readily admit that there has never been anything more remarkable in the whole world. One *The draining of the Fucine Lake.* of the most remarkable achievements of the same emperor, Claudius, neglected, though it was, by his malicious successor, is, in my opinion at least, the channel that he dug through a mountain to drain the Fucine Lake.[a] This, I need hardly say, entailed the expenditure of an indescribably large sum of money and the employment for many years of a horde of workers because, where earth formed the interior of the mountain, the water channel had to be cleared by lifting the spoil to the top of the shafts on hoists[b] and everywhere else solid rock had to be cut away, and operations underground (and how vast they were!) had to be carried out in darkness, operations which only those who witnessed them can envisage and no human utterance can describe. Incidentally, I must forbear to mention the harbour works at Ostia, and § 70.
likewise the roads driven through hills in cuttings, the moles that were built to separate the Tyrrhenian Sea Virg. *Geor.* II, 159.
from the Lucrine Lake, and all the bridges erected at such great cost. Among the many marvels of Italy itself is one for which the accomplished natural scientist Papirius Fabianus[c] vouches, namely that marble actually grows in its quarries; and the quarrymen, moreover, assert that the scars on the mountain

excavating the channels of aqueducts. Only the scale was unusual.

[c] The younger Seneca was a pupil of his.

firmant compleri sponte illa montium ulcera. quae si vera sunt, spes est numquam defutura luxuriae.

126 XXV. A marmoribus degredienti [1] ad reliquorum lapidum insignes naturas quis dubitet in primis magnetem occurrere? quid enim mirabilius aut qua in parte naturae maior inprobitas? dederat vocem saxis, ut diximus, respondentem homini, immo vero et obloquentem. quid lapidis rigore pigrius? ecce sensus manusque tribuit illi. quid ferri duritia
127 pugnacius? pedes ei [2] inpertivit et mores. trahitur namque magnete lapide, domitrixque illa rerum omnium materia ad inane nescio quid currit atque, ut propius venit, adsilit,[3] tenetur amplexuque haeret. sideritim ob id alio nomine vocant, quidam Heraclian.[4] magnes appellatus est ab inventore, ut auctor est Nicander—in Ida [5] repertus,[6] namque et passim inveniuntur, in [7] Hispania quoque;—invenisse autem fertur clavis crepidarum, baculi cuspide haerentibus,

[1] degredienti B[1] R: degrediente F: digredienti B[2]dh.
[2] pedes ei *Sillig* (*e coni. Iani*): pedes et B: cedet sed dT.
[3] adsilit B: assistit (adsistit F) *ceteri codd.*
[4] Heraclian *cod. a Detlefsen*: Heraclion B *Sillig, Mayhoff*: Heracleon dh.
[5] Ida *codd.*: India *edd. vett. ex Isid. XVI. iv. 2.*
[6] repertus h: reperto BRd: ut reperio *Mayhoff.*
[7] in Bd: ut in *ceteri codd.*

[a] Supposed instances of this regeneration of stone or of metallic ores were a favourite theme of the collectors of *mirabilia*; and the idea persisted until recent times. Presumably the quarries in question were those of Luna (Carrara): see XXXVI. 48.

[b] Pliny's rhetoric gives the magnet 'hands' with which to clasp the iron.

[c] The idea that the magnet creates a vacuum which causes, or helps to cause, the movement of the iron is exploited by

sides fill up of their own accord.[a] If this is true, there is reason to hope that there will always be marble sufficient to satisfy luxury's demands.

XXV. As we pass from marble to the other remarkable varieties of stone, no one can doubt that *Magnetite.* it is the magnet that first of all comes to mind. For what is more strange than this stone? In what field has Nature displayed a more perverse wilfulness? She has given to rocks a voice which, as I have ex- § 100. plained, echoes that of Man, or rather interrupts it as well. What is more impassive than the stiffness of stone? And yet we see that she has endowed the magnet with senses and hands.[b] What is more recalcitrant than the hardness of iron? We see that she has bestowed on it feet and instincts. For iron is attracted by the magnet, and the substance that vanquishes all other things rushes into a kind of vacuum [c] and, as it approaches the magnet, it leaps towards it and is held by it and clasped in its embrace. And so the magnet is called by the Greeks by another name, the 'iron stone,' and by some of them the 'stone of Heracles.' [d] According to Nicander, it was called 'magnes' from the name of its discover, who found it on Mount Ida.[e] Incidentally, it is to be found in many places, including Spain. However, the story goes that Magnes discovered the stone when the nails of his sandals and the tip of his staff stuck to it

Lucretius (VI. 998–1041) and Plutarch (*Plat. Quaest.* VII. 7). *Cf.* XXXVII. 48, and p. 200, n. [d].

[d] Pliny clearly supposed that the magnet was called *Heraclia* because of the force exerted by it, but the name may have been derived from the Lydian town of Heraclea, which was not far from Magnesia.

[e] From an unknown poem of Nicander of Colophon.

cum armenta pasceret. quinque genera magnetis
128 Sotacus demonstrat: Aethiopicum et a Magnesia Macedoniae contermina a Boebe [1] Iolcum petentibus dextra, tertium in Hyetto Boeotiae, quartum circa Alexandriam Troadem, quintum in Magnesia Asiae. differentia [2] prima, mas sit an femina, proxima in colore. nam qui in Magnesia Macedonica reperiuntur rufi nigrique sunt, Boeoti vero rufi coloris plus habent quam nigri. is qui Troade [3] invenitur niger est et feminei sexus ideoque sine viribus, deterrimus autem in Magnesia Asiae, candidus neque attrahens ferrum similisque pumici. conpertum tanto meliores esse, quanto sint magis caerulei. Aethiopico palma [4] datur pondusque
129 argento rependitur. invenitur hic in Aethiopiae Zmiri; ita vocatur regio harenosa. ibi et haematites magnes sanguinei coloris sanguinemque reddens, si teratur, sed et crocum. in adtrahendo ferro non eadem haematiti natura quae magneti. Aethiopici

[1] a Boebe *Sillig*: abo ebone BR: abebonie d: ab Euboea *Mayhoff*.
[2] differentia B²ha: differentiam B¹RFd: differentia est *Mayhoff*.
[3] Troade *codd.*: in Troade *edd. vett.*, *Mayhoff*.
[4] palma B: in summa *aut* summa *ceteri codd.*: laus summa *edd. vett.*

[a] The author of a work on stones. He lived in the early part of the 3rd century B.C.
[b] Reading with Sillig *a Boebe*, which makes good sense. The place was about 15 miles N.N.W. of Iolcos (mod. Volos).
[c] Many specimens of magnetite are not permanently 'magnetic.' These were Pliny's 'females'!

as he was pasturing his herds. Sotacus [a] describes five kinds of magnet: an Ethiopian; another from Magnesia, which borders on Macedonia and is on the traveller's right as he makes for Volos from Boebe; [b] a third from Hyettus in Boeotia; a fourth from the neighbourhood of Alexandria in the Troad; and a fifth from Magnesia in Asia Minor. The most important distinction is between the male and female varieties, [c] while the next lies in their colour. Those found in the Magnesia that is close to Macedonia are red and black, whereas the Boeotian have more red than black in them. Those found in the Troad are black and female, and therefore exert no force, [c] while the most worthless kind is that of Magnesia in Asia Minor, which is white, has no power of attracting iron and resembles pumice. [d] It has been ascertained that, the bluer a magnet is, the better it is. The palm goes to the Ethiopian variety, which in the market is worth its weight in silver. It is found in the sandy district of Ethiopia known as Zmiris. There, too, is found the haematite magnet, which is blood-red in colour and, when ground, produces not only bloodred but also saffron-yellow powder. [e] But haematite has not the same property of attracting iron as the magnet. The test of an Ethiopian magnet is its

[d] Possibly not all the five varieties were magnetite. The last stone ('the worst,' 'like pumice'), from Magnesia in Asia Minor, was probably the variety of talc which is called μαγνῆτις λίθος by Theophrastus (*de Lap.* 41). However, magnetite is found to-day at Manisa, the ancient Magnesia, 25 miles E.N.E. of Smyrna. Sotacus was no doubt confused as to the matter (Stanley Smith).
[e] Possibly red and brown haematite found together; possibly goethite, a species of brown haematite.

argumentum est, quod magneta quoque alium ad se
130 trahit. omnes autem hi oculorum medicamentis prosunt ad suam quisque portionem, maximeque epiphoras sistunt. sanant et adusta cremati tritique. alius rursus in eadem Aethiopia non procul mons[1] ferrum omne abigit respuitque. de utraque natura saepius diximus.

XXVI. Lapidem e Syro insula fluctuari[2] tradunt, eundem comminutum mergi.

131 XXVII. In Asso Troadis sarcophagus lapis fissili vena scinditur. corpora defunctorum condita in eo absumi constat intra XL diem exceptis dentibus. Mucianus specula quoque et strigiles et vestes et calciamenta inlata mortuis lapidea fieri auctor est. eiusdem generis et in Lycia saxa sunt et in oriente, quae viventibus quoque adalligata erodunt corpora.

[1] mons *plerique codd.*: magnes *Mayhoff ex coni. Urlichs*: mons gignit lapidem theameden qui h *edd. vett.*, *Sillig.*

[2] fluctuari (fluctuare h) *codd.*: fluitare *Pintianus.*

---

[a] 'All magnets will attract other magnets if unlike poles are presented to one another' (Bailey).

[b] Bailey here recalls that magnets repel each other when like poles are brought together. There is no need to read *magnes* for *mons* with Mayhoff. For the form of the expression, *cf.* II. 211, *duo sunt montes, etc.* The fact that a mountain has not already been mentioned is, in Pliny, not a serious objection. The phrase *gignit lapidem theameden* (*haematiten?*) *qui* read by h seems to be an interpolation.

[c] *I.e.*, *sympathia* (natural affinity or attraction) and *antipathia* (natural antipathy or aversion). *Cf.* XXVIII. 84 and 147; XXXVII. 59.

[d] Probably pumice, which may have been carried by currents to Syra (anc. Syros) from the volcanic islands of the Thera group, where floating pumice can be seen to-day.

ability to attract another magnet to itself.[a] All magnets, incidentally, are useful for making up eye-salves if each is used in its correct quantity, and are particularly effective in stopping acute watering of the eyes. They also cure burns when ground and calcined. Also in Ethiopia and at no great distance is another mountain, (the ore from) which on the contrary repels and rejects all iron.[b] Both of these properties have already been discussed by me on several occasions.[c]

Pumice.

XXVI. It is said that a stone from the island of Syros floats on the waves, but that it sinks when it has been broken into small pieces.[d]

The Sarcophagus stone.

XXVII. At Assos in the Troad we find the Sarcophagus stone, which splits along a line of cleavage. It is well known that corpses buried in it are consumed within a period of forty days, except for the teeth.[e] Mucianus[f] vouches for the fact that mirrors, scrapers, clothes and shoes placed upon the dead bodies are turned to stone as well. There are similar stones both in Lycia and in the East; and these, when attached even to living persons, eat away their bodies.

[e] No stone could consume a body in so short a time or petrify objects under such conditions. The stone of Assos was probably a fissile limestone. Lime, as Bailey suggests, may have been thrown into the coffin to aid decomposition. Water seeping through the coffin may have deposited calcium carbonate on the objects (Bailey), or the lime may have become slaked with moisture from the decomposing body and have been deposited on the objects, gradually forming a hard crust (Stanley Smith).

[f] Mucianus, governor of Syria in A.D. 69, helped Vespasian to become emperor. He compiled a volume of *mirabilia*, many of which no doubt had come to his notice during his residence in the East.

132 XXVIII. Mitiores autem servandis corporibus nec absumendis chernites[1] ebori simillimus, in quo Darium conditum ferunt, Parioque similis candore et duritia, minus tantum ponderosus, qui porus vocatur. Theophrastus auctor est et tralucidi lapidis in Aegypto, quem Chio similem ait. fortassis tunc fuerit, quoniam et desinunt et novi reperiuntur.

Assius gustatu salsus podagras lenit, pedibus in vas ex eo cavatum inditis. praeterea omnia crurum vitia in iis lapicidinis sanantur, cum in metallis omnibus
133 crura vitientur.[2] eiusdem lapidis flos appellatur, in farinam mollis[3] ad quaedam perinde efficax. est autem similis pumici rufo. admixtus cerae Cypriae mammarum vitia sanat, pici autem resinaeve strumas et panos discutit. prodest et phthisicis

[1] chernites *Hermolaus Barbarus* (*ex Theophrasto*): chemites *plerique codd.*: chirites *cod.* a. Fortasse *Chemmites.*
[2] vitientur *edd.*: vitiantur *aut* vicientur *aut* videntur *codd.*
[3] mollis *codd.*: molitus *coni. Mayhoff.*

---

[a] Pliny's description is drawn from Theophrastus (*de Lap.* 6), who implies that the stone is Egyptian. It was probably the onyx marble discussed earlier (XXXVI. 59–61). Theophrastus also supplied Hermolaus Barbarus with the reading *chernites*. The manuscripts of Pliny have *chemites*, for which it would be tempting to read *Chemmites*, for Chemmis (later Panopolis) lay in a region where onyx marble could have occurred and Strabo (XVII. 1, 41) states that stone working flourished there. But the evidence of all the manuscripts of Theophrastus is strongly supported by XXXVII. 191, where similarly, but on different grounds, *chemitis* must be replaced by *chernitis* (see p. 320, n. [b]).

[b] Almost certainly Darius III (336–330 B.C.).

[c] Again from Theophrastus (*de Lap.* 7), and again an Egyptian stone, presumably the exceptionally white limestone found, for example, in the Tura quarries E. of the Nile

XXVIII. However, there are stones that are gentler in their effects in that they preserve a body without consuming it, for example, the 'chernites,'[a] which closely resembles ivory and is said to be the material of which the coffin of Darius[b] is said to have been made, and, again, a stone called 'porus,' which is similar to Parian marble in whiteness and hardness, only not so heavy.[c] Theophrastus is our authority also for a translucent Egyptian stone said by him to be similar to Chian marble.[d] Such a stone may have existed in his time: stones cease to be found and new ones are discovered in turn.

Stone for coffins.

White limestone.

Basalt?

The stone of Assos, which has a salty taste, relieves gout if the feet are plunged into a vessel hollowed out of it. Moreover, all affections of the legs are cured in the quarries where it is hewn, whereas in all mines the legs are attacked by ailments. Belonging to the same stone is what is called the efflorescence, which is soft enough to form powder and is just as effective as the stone for certain purposes.[e] It looks, incidentally, like reddish pumice. Combined with Cyprian wax it cures affections of the breasts, and, if mixed with pitch or resin, disperses scrofulous sores and superficial abscesses. Taken as an

near Memphis. *Cf.* p. 68, n. [b]. πόρος is the usual Greek term for 'limestone.'

[d] Usually identified with obsidian, which does not occur in Egypt, and therefore more likely to be basalt, which may, when freshly hewn, display transparent crystals (Stanley Smith). Pliny omits to mention that the stone was *black* (*de Lap.* 7).

[e] The powdery efflorescence may well be gypsum produced by the action of sulphuric acid, which in its turn would have resulted from the decomposition of pyrites upon the limestone (Stanley Smith).

linctu. cum melle vetera ulcera ad cicatrices perducit, excrescentia erodit et a bestiarum morsu repugnantia curationi suppurata siccat. fit cataplasma ex eo podagricis mixto fabae lomento.

134 XXIX. Idem Theophrastus et Mucianus esse aliquos lapides qui pariant credunt; Theophrastus et ebur fossile candido [1] et nigro colore [2] inveniri et ossa e terra nasci invenirique lapides osseos.

Palmati circa Mundam in Hispania, ubi Caesar dictator Pompeium vicit, reperiuntur idque quotiens
135 fregeris. sunt et nigri quorum auctoritas venit in marmora, sicut Taenarius. Varro nigros ex Africa firmiores esse tradit quam in Italia, e diverso albos Coranos duriores quam Parios, idem Luniensem silicem serra secari, Tusculanum dissilire igni, Sabinum fuscum addito oleo etiam lucere. idem

[1] candido BRh: e candido *Mayhoff.*
[2] colore inveniri R(?)h: inveniri Fda *Mayhoff* (inveniri . . . nasci *om.* B).

[a] He is referring to eagle-stones (XXXVI. 149–151).
[b] *Fossile* merely means 'dug up.' Fossil ivory has been identified with bone turquoise (odontolite). The appearance of bone turquoise, however, does not readily suggest an organic substance. It is more likely that Theophrastus (*de Lap.* 37) had in mind bones of a less altered character, like those which have been found in large deposits at Pikermi in Attica (Stanley Smith).
[c] Not in any extant work.

electuary it is also good for consumption. When blended with honey, it causes scars to form over chronic sores, reduces excrescences of flesh and dries up matter discharging from a bite when it will not yield to other treatment. In cases of gout a plaster is made of it with an admixture of bean-meal.

Some curious stones.

XXIX. Theophrastus, again, and Mucianus express the opinion that there are certain stones that give birth to other stones.[a] Theophrastus states also that fossil ivory coloured black and white is found,[b] that bones are produced from the earth and that stones resembling bones come to light.[c]

In the neighbourhood of Munda in Spain, the place where Julius Caesar defeated Cn. Pompeius, occur 45 B.C.
stones containing the likeness of a palm branch, which appears whenever they are broken.[d] There are also black stones, like that of Cape Matapan, that § 158.
have come to be esteemed as much as any marble. Varro states that black stones from Africa are harder than the Italian, but that, on the other hand, the white stone of Cora is harder than that of Paros. He mentions too that Carrara stone[e] can be cut with a saw, that Tusculan stone is split by fire and that the dark Sabine variety actually becomes bright[f] if oil is poured on it. Varro also assures us

[d] Perhaps andalusite (Bailey).
[e] *Silex* is here used as a general term for any hard stone. *Cf.* § 124.
[f] The meaning is uncertain: 'will yield a flame even' (Bostock and Riley); 'actually gleams' (Bailey); but the former rendering gives an unnatural sense to *lucere*, while the latter statement is not sufficiently remarkable to justify *etiam*. For the rendering adopted, *cf.* § 136 (end).
The Tusculan and Sabine stones were calcareous tufas.

molas versatiles Volsinis inventas; aliquas et sponte
136 motas invenimus in prodigiis. XXX. nusquam hic utilior quam in Italia gignitur lapisque, non saxum, est. in quibusdam vero provinciis omnino non invenitur. sunt quidam in eo genere molliores, qui et cote levantur, ut procul intuentibus ophites videri possit, neque est alius firmior, quando et lapidis natura ligno similiter imbres solesque aut hiemes non patitur in aliis generibus atque aliis. sunt et qui lunam non tolerent et qui vetustate robiginem trahant coloremve candidum oleo mutent.

137 Molarem quidam pyriten vocant, quoniam plurimus sit ignis illi, sed est alius spongiosior tantum et alius [1] etiamnum pyrites similitudine aeris. in Cypro eum reperiri volunt metallis quae sint circa Acamanta, unum argenteo colore, alterum aureo. coquuntur varie, ab aliis iterum tertiumque in melle donec consumatur liquor, ab aliis pruna prius, dein in [2] melle, ac postea lavantur ut aes. usus eorum in medicina excalfacere, siccare, discutere, extenuare et duritias in pus vertere. utuntur et crudis tusisque
138 ad strumas atque furunculos. pyritarum etiamnum

[1] spongiosior tantum et alius B: *om. ceteri codd.*: tactu *pro* tantum *coni. Mayhoff.*
[2] dein in *Ianus*: dein *codd.*

---

[a] The statement is far from clear and has caused some discussion. Did Varro mean that rotary mills were invented at Volsinii or that stones suitable for them were found there? Probably neither, if Pliny has understood him correctly. In this context he is surely reporting a curiosity. Round millstones were found, ready for use in their natural state.

In Greece and Italy lava was normally the material of which millstones were made.

that rotary querns have been found at Bolsena;[a] and *Millstones.* we find in records of miraculous occurrences that some querns have even moved of their own accord. XXX. Nowhere are more serviceable millstones to be found than in Italy, for here they are proper stones and not lumps of rock. In certain provinces, however, they are not found at all. Some stones of this kind are quite soft and can be smoothed also with a whetstone, so that from a distance they may be mistaken for serpentine. No other stones are *§§ 55–56.* more durable than millstones; for, as with wood, it is characteristic of stones of one sort or another to be unable to stand rain, sun or wintry weather. Some are affected even by the moon, while others acquire a patina in course of time or lose their white colour when treated with oil.

Some people call a millstone 'pyrites,' or 'fire- *Pyrites.* stone,' because there is a great amount of fire in it. However, there is another 'pyrites' which is similar, only more porous, and yet another which resembles copper. It is claimed that in the mines near Acamas in Cyprus two kinds of pyrites are found, one having the colour of silver and the other of gold. There are several ways of roasting the mineral. Some roast it two or three times with honey until the moisture is consumed, whereas others roast it first on hot coals and then with honey. Afterwards, it is washed like copper. The varieties of pyrites are used in pharmacy for their warming, drying, dispersing and reducing effects, and also to cause indurations to discharge their matter. They are also used raw, in the form of powder, for treating scrofulous sores and boils. Some writers class as 'pyrites' yet another

unum genus aliqui faciunt plurimum ignis habentis.[1] quos vivos appellamus, ponderosissimi sunt, hi exploratoribus castrorum maxime necessarii. qui clavo vel altero lapide percussi scintillam edunt quae excepta sulpure aut fungis aridis vel foliis dicto celerius praebet [2] ignem.

139 XXXI. Ostracitae similitudinem testae habent. usus eorum pro pumice ad levandam cutem. poti sanguinem sistunt et inliti cum melle ulcera doloresque mammarum sanant. Amiantus alumini similis nihil igni deperdit. hic veneficiis resistit omnibus,
140 privatim Magorum. XXXII. Geoden ex argumento appellant, quoniam conplexus est terram, oculorum medicamentis utilissimum, item mammarum ac testium vitiis. XXXIII. Melitinus lapis sucum remittit dulcem melleumque. tunsus et cerae mixtus eruptionibus pituitae maculisque corporis medetur et faucium exulcerationi, epinyctidas tollit, volvarum
141 dolores inpositus vellere.[3] XXXIV. Gagates lapis nomen habet loci et amnis Gagis Lyciae. aiunt et in Leucolla expelli mari atque intra XII stadia colligi. niger est, planus, pumicosus, levis, non multum a ligno differens, fragilis, odore si teratur gravis.

[1] ignis habentis d²T: ignis habent ii B.
[2] praebet Ba: trahunt dTh.
[3] vellere B: velleri Rdh: in vellere *coni. Mayhoff.*

---

[a] Under *pyrites* Pliny includes, among other stones, iron pyrites, copper pyrites and flint (Stanley Smith), but Bailey considers the last kind to be emery rather than flint, because of its weight.

[b] Perhaps the Alagoz, between Finike and Chirali. Near Chirali is the 'Chimaera,' an everlasting fire, caused by gas escaping from the earth.

[c] In Pamphylia, to the E. of Lycia.

kind of stone that contains a great quantity of fire. Stones known as 'live stones' are extremely heavy and are indispensable to reconnaissance parties preparing a camp-site. When struck with a nail or another stone they give off a spark, and if this is caught on sulphur or else on dry fungi or leaves it produces a flame instantaneously.[a]

XXXI. The 'ostracites,' or 'potsherd stone,' resembles a potsherd and is used instead of pumice as a depilatory. Taken as a draught it arrests bleeding and applied as an ointment with honey cures sores and pains in the breasts. 'Amiantus,' which looks *Chrysotile (asbestos); xxxv. 183.* like alum, is quite indestructible by fire. It affords protection against all spells, especially those of the Magi.

XXXII. Geodes receive their name in token of *Geodes.* their earthy character, since earth is enclosed within them. They are of great use as ingredients of eye-salves and also in treating affections of the breasts and testicles.

XXXIII. The 'melitinus' stone exudes a liquid that is sweet and is like honey. When pounded and mixed with wax it cures acute catarrh, spots on the skin and sore throats, and removes sores on the eyelids; and if applied on a wool dressing it causes pains in the uterus to disappear.

XXXIV. Jet derives its name from a district and *Jet.* a river in Lycia known as Gages.[b] It is said also to be washed up by the sea on the promontory of Leucolla [c] and to be gathered at places up to a dis- *v. 96.* tance of a mile and a half. Jet is black, smooth, porous, light, not very different from wood, and brittle, and has an unpleasant smell when rubbed. Anything

fictilia ex eo inscripta non delentur; cum uritur, odorem sulpureum reddit; mirumque, accenditur
142 aqua, oleo restinguitur. fugat serpentes ita recreatque volvae strangulationes. deprendit sonticum morbum et virginitatem suffitus. idem ex vino decoctus dentibus medetur strumisque cerae permixtus. hoc dicuntur uti Magi in ea quam vocant axinomantiam, et peruri negant si eventurum[1] sit
143 quod aliquis optet. XXXV. Spongitae lapides inveniuntur in spongeis et sunt marini. quidam eos tecolithos vocant, quoniam vesicis medentur, calculos rumpunt in vino poti. XXXVI. Phrygius lapis gentis habet nomen; est autem glaeba pumicosa. uritur ante vino perfusus, flaturque[2] follibus donec rufescat, ac rursus dulci vino extinguitur ternis vicibus, tinguendis vestibus tantum utilis.

144 XXXVII. Schistos et haematites cognationem habent. haematites invenitur in metallis, ustus minii colorem imitatur, uritur ut Phrygius, sed non

[1] eventurum Rdha: venturum B.
[2] flaturque *codd.* da *edd. vett.*, *Detlefsen*: flatur B: flatus *Mayhoff*.

[a] Spontaneous combustion of coal (jet is a vitreous form of lignite) is aided by moisture; but the quenching by oil is an oft-repeated fiction. Much of Pliny's account is true of jet, but some of it would also suit asphalt, which is sometimes the meaning of *gagates*; and there are deposits of asphalt in Lycia.

inscribed in it on earthenware is indelible. When it is burnt it gives off a smell like that of sulphur. What is remarkable is that it is ignited by water and quenched by oil.[a] The kindling of jet drives off snakes and relieves suffocation of the uterus. Its fumes detect attempts to simulate a disabling illness or a state of virginity. Moreover, when thoroughly boiled with wine it cures toothache and, if combined with wax, scrofulous tumours. The Magi are said to make use of it in what they call 'divination by axes'; and they assert it will not burn away completely if a wish is destined to come true.[b]

XXXV. Sponge stones are found in sponges, and therefore belong to the sea.[c] They are sometimes called in Greek 'stone-solvents' because they cure affections of the bladder and break up stone in it if they are taken in wine. XXXVI. Phrygian stone is so called from the people of that name and occurs as porous lumps.[d] After being soaked in wine it is roasted, and bellows are used to fan it until it turns red, whereupon it is quenched with sweet wine, and the process is repeated three times on each occasion. It is of use only in dyeing garments.

XXXVII. 'Schistos' and haematite are closely *Haematite.* related. Haematite is found in mines, and when roasted reproduces the colour of red-lead. It is roasted in the same way as the Phrygian stone, § 143.

[b] Probably the fuel was placed on an axe and predictions made from the manner in which it burned.
[c] Stones entangled by sponges, or else the skeletons of sponges (Bailey).
[d] The Phrygian stone, like the *ostracites* (§ 139) and the *melitinus* (§ 140), cannot be identified.

restinguitur vino. adulteratur [1] haematites; [2] dis-
145 cernunt venae rubentes et friabilis natura. oculis
cruore suffusis mire convenit. sistit profluvia
mulierum potus. bibunt et qui sanguinem reiecerunt
cum suco Punici mali. et in vesicae vitiis efficax
bibitur et in vino contra serpentium ictus. infirmiora
omnia eadem in eo quem schiston appellant. in
iis [3] commodior croco similis, peculiaris explendis
ulcerum [4] lacunis in lacte muliebri, procidentesque
oculos praeclare cohibet. haec est sententia eorum
146 qui nuperrime scripsere; XXXVIII. Sotacus e
vetustissimis auctoribus quinque genera haema-
titarum tradit praeter magnetem. principatum dat
ex iis Aethiopico, oculorum medicamentis utilissimo
et iis quae panchresta appellat, item ambustis.
alterum androdamanta dicit vocari, colore nigrum,
pondere ac duritia insignem, et inde nomen traxisse
praecipueque in Africa repertum; trahere autem in
147 se argentum, aes, ferrum. experimentum eius esse
in cote ex lapide basanite—reddere enim sucum
sanguineum—et esse ad iocineris vitia praecipui

[1] adulteratur BRda *edd. vett.*, *K. C. Bailey*: adulteratum *Salmasius*, *Sillig*, *Mayhoff*.
[2] haematites dh(?) *K. C. Bailey*: haematiten B² *Sillig*, *Mayhoff*: haematite B¹R.
[3] in iis (in his B²R) *codd.*: oculorum vitiis *Mayhoff*, *coll. Diosc. V. 144.*
[4] ulcerum *Urlichs*: oculorum *codd.*

---

[a] Strictly speaking, a fissile variety of brown haematite, as its name implies, and probably to be identified with limonite.
[b] *I.e.*, the *haematites magnes* of § 129.
[c] Probably Pliny means siliceous slate, that is, a touchstone (*βάσανος*), for which *cf.* XXXIII. 126.

except that it is not quenched with wine. It can be counterfeited, but genuine haematite is distinguished by its occurrence as red veins and by its friable character. It is extraordinarily good for bloodshot eyes, and checks excessive menstruation if it is taken as a draught. It is drunk also, with pomegranate juice added, by patients who have brought up blood. A draught of it is an effective remedy for bladder trouble; moreover, if it is taken in wine it is an antidote for snake-bites. All these properties exist, but in a weaker form, in the substance known as 'schistos.'[a] Among its varieties, the more suitable is like saffron in colour. Mixed with human milk it is a specific for filling cavities left by sores. It is also admirable for reducing protruding eyes. Such is the consensus of opinion among the most recent writers.
XXXVIII. Among the oldest authorities Sotacus § 128.
records five kinds of haematite, apart from the magnet.[b] Of these, the Ethiopian receives from him the first place, a variety which is very useful for making up eye-salves and what the Greeks call 'universal remedies,' as well as being effective for burns. The second is, according to him, known as 'man-tamer,' black in colour and exceptionally heavy and hard: hence its name. It is found mainly in Africa and attracts silver, copper and iron. The method of testing it is to rub it on a whetstone of slate,[c] when, if genuine, it gives off a blood-red smear.[d] It is a capital remedy for affections of the liver. The

[d] Lit. 'juice.' As Bailey suggests, either Pliny is using *sucus* in the sense of 'streak' or else a *cos aquaria* (see below) was used, and the moisture from this wetted the red powder rubbed from the ore.

remedii. tertium genus Arabici facit, simili duritia, vix reddentis sucum ad cotem aquariam, aliquando croco similem. quarti generis hepatiten[1] vocari quamdiu crudus sit, coctum vero miltiten, utilem ambustis, ad omnia utiliorem rubrica; quinti generis
148 schiston, haemorroidas reprimentem in potu. omnes autem haematitas tritos in oleo III drachmarum pondere a ieiunis bibendos ad vitia sanguinis. idem schiston et alterius generis quam haematiten tradit, quem vocat anthraciten; nasci in Africa nigrum, attritum aquariis cotibus reddere ab ea parte quae fuerit ab radice nigrum colorem, ab altera parte croci. ipsum utilem esse oculorum medicamentis.

149 XXXIX. Aëtitae lapides ex argumento nominis magnam famam habent. reperiuntur in nidis aquilarum, sicut in decumo volumine diximus. aiunt binos inveniri, marem ac feminam, nec sine iis parere quas diximus aquilas, et ideo binos tantum; genera eorum quattuor: in Africa nascentem pusillum ac mollem, intra se velut in alvo habentem argillam suavem, candidam. ipsum friabilem feminei sexus putant, marem autem qui in Arabia nascatur, durum,

[1] hepatiten B: elatiten Rd *cod. Poll.*

[a] Apart from the Ethiopian, for which there is no indication, the varieties mentioned by Sotacus may be identified thus: *androdamas* black specular iron ore, the Arabian and *schistos* limonite, *hepatites* (lit. ' liver stone ') kidney ore (Bailey).

[b] Not coal, but a specimen of ore which was partly magnetite and partly limonite (Bailey).

[c] ' That is why there are never more than two eaglets in a nest ' (Bailey); but this contradicts X. 13, where Pliny asserts that there are three chicks, one of which is expelled.

third kind, according to Sotacus' reckoning, is the Arabian, which is similarly hard and produces scarcely any smear on a hone used with water, §§ 164–165.
although on occasion there is a saffron-coloured smear. The fourth kind, so he says, is known as ' liver ore ' in its natural state, and as ' ruddle ore ' when it is roasted. It is useful for treating burns and more useful than ruddle for any purpose. The fifth is ' schistos,' and this when taken as a draught reduces piles.[a] Sotacus goes on to say that three drachms of any haematite pounded in oil should be swallowed on an empty stomach to counteract blood ailments. He also describes a ' schistos ' different in kind from the haematite ' schistos ' and known as anthracite.[b] He states that it is a black stone found in Africa and that, when it is rubbed on a water hone, what was originally the lower end produces a black mark and the other end a saffron-coloured one. According to him, it is useful by itself for making up eye-salves.

XXXIX. Eagle stones have acquired a reputation *Eagle stones:*
owing to the associations aroused by the term. As I X. 12; XXX. 130; § 135.
have already stated in Book X, they are found in X. 12.
eagles' nests. It is said that they are found in pairs, a male and a female, and that without them the eagles in question cannot produce young: hence there is only a pair of stones.[c] There are four kinds of eagle stones. One kind found in Africa is small and soft, and carries inside it, as though in a womb, a pleasing white clay. The stone itself is liable to crumble and is considered to be female, while a kind that occurs in Arabia and is hard, coloured like an oak gall or else reddish in appearance and containing

gallae similem aut subrutilum, in alvo habentem
150 durum lapidem. tertius in Cypro invenitur colore
illis in Africa nascentibus similis, amplior tamen
atque dilatatus; ceteris enim globosa facies. habet
in alvo harenam iucundam et lapillos, ipse tam mollis
ut etiam digitis frietur.[1] quarti generis Taphiusius
appellatur, nascens iuxta Leucada in Taphiusa, qui
locus est dextra navigantibus ex Ithaca Leucadem.
invenitur in fluminibus candidus ac rotundus. huic
est in alvo lapis qui vocatur callimus, nec quicquam
151 terreni.[2] aëtitae gravidis adalligati mulieribus vel
quadripedibus pelliculis sacrificatorum animalium
continent partus, non nisi parturiant removendi;
alioqui volvae excidunt. sed nisi parturientibus
auferantur, omnino non pariant.[3]
152 XL. Est et lapis Samius in eadem insula, ubi
terram laudavimus, poliendo auro utilis, in medicina
oculorum ulceribus cum lacte quo supra dictum est
modo et contra veteres lacrimationes. prodest et
contra vitia stomachi potus, vertigines sedat mentesque commotas restituit. quidam et morbis comi-

[1] frietur RFd: frigetur B[1]: fricetur B[2]h.
[2] terreni *Mayhoff, K. C. Bailey*: terrent BRd: tenerius h; teretius *Sillig e coni. Iani.*
[3] pariant B[2]F[1]: pariunt *ceteri codd.*

---

[a] This description of the Arabian stone recalls the commonest kind of eagle stone, the limonite nodule with a detached kernel (Stanley Smith).

a hard stone in its hollow centre, is regarded as a male.[a] A third kind found in Cyprus is similar in colour to those of Africa, but is larger and elongated, the shape of all other kinds being spherical. It carries inside it an agreeable kind of sand and small nodules, while the stone itself is soft enough to be crumbled merely with one's fingers. The fourth kind, known as the Taphiusian, occurs not far from the island of Leucas in Taphiusa, a district that lies to the right as one sails to Leucas from Ithaca. It is found as a white, round stone in streams. In its hollow centre is a stone known as the 'callimus,' but no trace of earthy matter. Eagle stones, wrapped in the skins of animals that have been sacrificed, are worn as amulets by women or four-footed creatures during pregnancy so as to prevent a miscarriage. They must not be removed except at the moment of delivery: otherwise, there will be a prolapse of the uterus. On the other hand, if they were not removed during delivery no birth would take place.

The Samian stone.

XL. There is also the stone of Samos, found in the island of that name, the earth from which we have already had occasion to praise.[b] The stone is useful XXXV. 191. as a gold polish, while in pharmacy, if it is mixed with milk in the manner described above,[c] it is good for ophthalmic ulcers and chronic watering of the eyes. When taken as a draught it also counteracts stomach ailments, relieves giddiness and corrects disturbances of the mind. Some doctors hold that it can be administered with benefit in cases of epi-

[b] Samian earth is kaolinite (china clay). The stone may have been kaolinite in a compacted form (Bailey).
[c] *I.e.*, with human milk (§ 145).

tialibus utiliter dari putant et ad urinae difficultates. et acopis miscetur. probatur gravitate, candore.
153 volunt et partus contineri adalligato eo. XLI. Arabus lapis, ebori similis, dentifriciis adcommodatur crematus. privatim haemorroidas sanat cum lanugine linteorum aut super [1] linteolis inpositis.
154 XLII. Non praetermittenda est et pumicum natura. appellantur quidem ita erosa saxa in aedificiis, quae musaea vocant, dependentia ad imaginem specus arte reddendam, sed ii pumices qui sunt in usu corporum levandorum feminis, iam quidem et viris, atque, ut ait Catullus, libris, laudatissimi sunt in
155 Melo, Nisyro et Aeoliis insulis. probatio in candore minimoque pondere et ut quam maxime spongiosi aridique sint, teri faciles nec harenosi in fricando.[2] vis eorum in medicina extenuare, siccare, trina ustione ita, uti torreantur carbone puro, totiens vino restinguantur albo. lavantur deinde ut cadmia et siccati conduntur quam minime uliginoso loco. usus
156 farinae eius [3] oculorum maxime medicamentis: ulcera purgant eorum leniter explentque, cicatrices emen-

[1] aut super B: insuper Rd: et insuper *coni. Mayhoff.*
[2] fricando *codd.*: friando *coni. Mayhoff coll. Theophr. de Lap. 21.*
[3] eius *codd.*: ex iis *Mayhoff.*

[a] *Acopa* (lit. 'not fatiguing' or 'not fatigued') seem generally to have been liniments used to relieve fatigue and stiffness.
[b] This stone cannot be identified. Possibly onyx marble from the Arabian Hills of Egypt (§§ 59–61). *Chernites*, probably also onyx marble, is likewise described as resembling ivory (§ 132).
[c] A kind of gazebo, or summer-house, the interior of which was arranged as a grotto.

lepsy and strangury. Moreover, it is mixed with other ingredients in embrocations to relieve fatigue.[a] The test of its genuineness is based upon its weight and white colour. Worn as an amulet, it is claimed to prevent a miscarriage. XLI. The Arabian stone, which resembles ivory, can, if calcined, be suitably used as a tooth powder.[b] But, in particular, it cures piles if combined with lint or placed on a linen dressing locally applied.

XLII. We must not forget to discuss also the characteristics of pumice. This name, of course, is given to the hollowed rocks in the buildings called by the Greeks 'Homes of the Muses,'[c] where such rocks hang from the ceilings so as to create an artificial imitation of a cave. But as for the pumice which is used as a depilatory for women, and nowadays also for men, and moreover, as Catullus [d] reminds us, for books, the finest quality occurs in Melos, Nisyros, and the Aeolian Islands. The test of its quality is that it should be white, very light in weight, extremely porous and dry, and easy to grind, without being sandy when rubbed. In pharmacy it has a reducing and drying effect. It is calcined three times in a fire of pure charcoal and quenched the same number of times in white wine. It is then washed like *cadmea*,[e] and having been dried is stored in a place as free from damp as possible. The powder is used mostly for eye-salves, since it gently cleanses ophthalmic ulcers and heals them, and removes *Pumice.*

[d] Catullus (1, 2; 22, 8) refers to the use of pumice in smoothing the edges of the book roll.
[e] Here furnace calamine (oxide of zinc), which was washed in *mortaria* (XXXIV. 104), flat dishes used for pounding.

dant. Quidam a tertia ustione refrigeratos potius quam restinctos terere malunt ex vino. adduntur et in malagmata capitum verendorumque ulceribus utilissimi. fiunt ex iis et dentifricia. Theophrastus auctor est potores in certamine bibendi praesumere farinam eam, sed, nisi universo potu inpleantur, periclitari, tantamque refrigerandi naturam esse ut musta fervere desinant pumice addito.

157 XLIII. Auctoribus curae fuere lapides mortariorum quoque, nec medicinalium tantum aut ad pigmenta pertinentium. Etesium lapidem in iis praetulere ceteris, mox Thebaicum, quem pyrropoecilon appellavimus—aliqui psaron[1] vocant—tertium ex chalazio chrysiten, medicis autem ex basanite. hic enim lapis nihil ex sese remittit. ii lapides qui sucum reddunt oculorum medicamentis utiles existimantur; ideo Aethiopici ad ea maxime
158 probantur. Taenarium lapidem et Phoeniceum et haematiten iis medicamentis prodesse tradunt quae

[1] psaron *cod.* a: psaranum B *Mayhoff*: psaronum Fd.

[a] There is nothing to this effect in Theophrastus (*Hist. Plant.* IX. 17, 3), but Pliny may have misunderstood him. There is no need to follow Mayhoff in supposing the sentence to be corrupt.

[b] Here *chrysites* seems to mean 'a touchstone,' *i.e.*, a stone that assays gold. *Cf.* Pollux VII. 102. *Chalazios*, like *pyrrhopoecilos*, may be a granite, but with white spots instead of red.

[c] By *basanites* Pliny probably means not basalt, but siliceous slate, as in § 146. See p. 116, n. [e].

[d] Or perhaps 'yield a liquid' (Bostock and Riley): *cf.* § 140. But the reference to touchstones points to the rendering adopted in the translation. With *sucum reddunt* 'produce a smear,' *cf.* § 147, *reddentis sucum.*

the scars. Incidentally, some pharmacists, after calcining the pumice three times, prefer to let it cool rather than quench it, and then to pound it mixed with wine. It is added also to poultices, and is then most useful for treating sores on the head or the private parts. Tooth powders, too, are prepared from it. Theophrastus assures us that topers competing in drinking contests first take a dose of the powder, but states that they run a grave risk unless they fill themselves with wine at a single draught.[a] He adds that the cooling properties of pumice are so powerful that new wine stops bubbling when pumice is added to it.

XLIII. Our authorities have been interested also in stones used for making mortars; and I do not mean merely mortars used for pounding drugs or grinding pigments. Among such stones, they give the first place to the Etesian and the second to that of the Thebaid which I have already cited as the 'pyrrhopoecilos,' or 'the stone with the red spots,' and some people call 'psaros,' 'the speckled stone'. The third place they award to the touchstone of rock resembling hail,[b] or for medical purposes to one of siliceous slate.[c] For this latter stone yields nothing from its own substance. Stones which produce a smear[d] are considered to be useful for making up eye-salves: hence the Ethiopian is most highly valued for this purpose. The stone of Cape Matapan, the Phoenician stone and haematite are said to be good for preparing prescriptions that contain saffron.

Stones for mortars.

§ 63.

§ 146.

§ 135.

ex croco componantur; ex alio Taenario, qui niger est, et ex Pario lapide non aeque medicis utilem, potioremque ex alabastrite Aegyptio vel ex ophite albo. est enim hoc genus ophitis, ex quo vasa et cados etiam faciunt.

159 XLIV. In Siphno lapis est qui cavatur tornaturque in vasa vel coquendis cibis utilia vel ad esculentorum usus, quod et in Comensi Italiae lapide viridi accidere scimus, sed in Siphnio singulare quod excalfactus oleo nigrescit durescitque natura mollissimus. tanta qualitatium differentia est. nam mollitiae trans Alpis praecipua sunt exempla. in Belgica provincia candidum lapidem serra, qua lignum, faciliusque etiam secari aiunt[1] ad tegularum et imbricum vicem vel, si libeat, quae vocant pavonacea tegendi genera.

160 XLV. Et hi quidem sectiles sunt, specularis vero, quoniam et hic lapidis nomen optinet, faciliore multo natura finditur in quamlibeat tenues crustas. Hispania hunc tantum citerior olim dabat, nec tota, sed intra c̄[2] passuum circa Segobrigam urbem, iam et Cypros et Cappadocia et Sicilia et nuper inventum

[1] secari aiunt *ego*: secantium Bda: secant h(?) *Sillig*: secant tantum *Mayhoff*.

[2] c̄ *Mayhoff, K. C. Bailey*: centum milia *codd.* ha: C *codd.* BFd.

[a] Probably soapstone (steatite), a variety of talc. The Italian and Belgic stones are also likely to have been soapstone.

[b] *Imbrices* were curved tiles, which covered the joints between the *tegulae*.

[c] Possibly tiles laid so as to overlap like scales, with an effect somewhat similar to that of a peacock's tail feathers.

[d] *Lapis specularis* has been identified with mica, but is more likely to have been selenite. It was used for glazing windows and even cold frames. Selenite was sometimes used as a substitute for window glass as late as the 18th century.

But mortars made of another stone from Cape Matapan, a black marble, or of Parian marble are not so useful to doctors, so we are told, better ones being made of onyx marble from Egypt or of white serpentine. For there is such a species of serpentine, and vessels and boxes also are made of it.

Siphnian stone. Theophr. *de Lap.* 42.

XLIV. In the island of Siphnos there is a stone that is hollowed out and turned on the lathe so as to form cooking utensils or tableware;[a] and this I myself know to be the case also with the green stone of Como in Italy. The Siphnian stone, however, has a peculiarity of its own in that when thoroughly heated with oil it becomes black and hard, whereas naturally it is very soft. Such are the divers properties to be found in one substance. Incidentally, exceptional instances of soft stones occur beyond the Alps. In the province of Belgic Gaul a white stone is said to be cut with a saw, just like wood, only even more easily, so as to serve as ordinary roof tiles and as rain tiles[b] or, if so desired, as the kind of roofing known as 'peacock-style.'[c]

The specular stone.

XLV. These stones, then, can be cut with a saw. However, the specular stone (for even this substance ranks as a stone) has a far more amenable character which allows it to be split into plates as thin as may be wished.[d] Formerly it was produced only in Hither Spain, and even then not in the whole of the province, but merely within an area of a hundred miles around the city of Priego. Nowadays supplies come too from Cyprus, Cappadocia, Sicily and, a recent discovery, from Africa. However, all these

Africa, postferendos tamen omnes Hispaniae, Cappa-
161 docia amplissimos magnitudine, sed obscuros. sunt et in Bononiensi Italiae parte breves maculae[1] complexu silicis alligatae,[2] quarum[3] tamen appareat natura similis. puteis in Hispania effoditur e profunda altitudine, nec non et saxo inclusus sub terra invenitur extrahiturque aut exciditur, sed maiore parte[4] fossili natura, absolutus in se caementi modo, numquam adhuc quinque pedum longitudine amplior. umorem hunc terrae quadam anima crystalli modo glaciari et in lapidem concrescere manifesto apparet, quod cum ferae decidere in puteos tales, medullae in ossibus earum post unam hiemem in eandem lapidis naturam figurantur.
162 invenitur et niger aliquando, sed candido natura mira, cum sit mollitia nota, perpetiendi soles rigoresque, nec senescit, si modo iniuria absit, cum hoc etiam in caementis multorum generum accidat. invenere et alium usum in ramentis squamaque, Circum maximum ludis Circensibus sternendi ut sit in commendatione candor.

163 XLVI. Nerone principe in Cappadocia repertus est lapis duritia marmoris, candidus atque tralucens

[1] maculae *K. C. Bailey*: macula B *Mayhoff*: maculosi *cod.* a *edd. vett.*: maculosae F.

[2] alligatae B *K. C. Bailey*: alligate dh: alligati *edd. vett.*: alligata *Mayhoff*.

[3] quarum *aliquot codd.*: quorum h *edd.*

[4] parte *codd.*: ex parte *Mayhoff*.

---

[a] Bailey translates 'are marred by their dark colour,' but this seems far less likely.

[b] See Introduction, pp. x–xi.

[c] Probably a black variety of mica, such as lepidomelane (Bailey).

kinds are inferior to that of Spain: Cappadocia produces the largest pieces, but they lack transparency.[a] Moreover, in the region of Bologna in Italy small streaks occur tightly embedded within hard rock; and yet they are large enough for their essential similarity to the rest to be unmistakable. In Spain the specular stone is dug at a great depth by means of shafts; and it is found too just beneath the surface enclosed in rock, in which case it has to be torn away or cut out; but for the most part its formation allows it to be dug, since it occurs in isolation as rough blocks. No piece exceeding five feet in length has hitherto been discovered. It is palpably obvious that we have here a liquid which, like rock-crystal, has been frozen and petrified by an exhalation in the earth,[b] because when wild animals fall down the shafts just mentioned the marrow in their bones after a single winter takes on the appearance of this selfsame stone. On occasion a black variety[c] of the stone is also found, but it is the bright kind, notoriously soft though it may be, that has a remarkable property of withstanding the effects of hot and cold weather. Moreover, provided that it escapes abuse, it does not deteriorate, although this is apt to happen even with blocks of many varieties of stone. A further use has been devised for the specular stone in the shape of the shavings and flakes strewn on the surface of the Circus Maximus during the Games to produce an attractively bright effect.

XLVI. During Nero's principate there was discovered in Cappadocia a stone as hard as marble, white and, even where deep-yellow veins occurred, *Phengites.*

etiam qua parte fulvae inciderant venae, ex argumento phengites appellatus. hoc construxerat aedem Fortunae quam Seiani appellant, a Servio rege sacratam, amplexus aurea domo; quare etiam foribus opertis interdiu claritas ibi diurna erat alio quam specularium modo tamquam inclusa luce, non transmissa. in Arabia quoque esse lapidem vitri modo tralucidum, quo utantur pro specularibus, Iuba auctor est.

164 XLVII. Nunc ad operarios lapides transisse conveniat primumque cotes ferro acuendo. multa earum genera: Creticae diu maximam laudem habuere, secundam Laconicae e Taygeto monte, oleo utraeque indigentes. inter aquarias Naxiae laus maxima fuit, mox Armeniacae, de quibus diximus. ex oleo et aqua Ciliciae pollent, ex aqua Arsinoiticae.
165 repertae sunt et in Italia aqua trahentes aciem acerrimae[1] effectu, nec non et trans Alpis, quas

[1] acerrimae *cod.* a: acerrime d: acerrimo h *edd. vett.*: acerrima *aliquot codd.*

[a] Perhaps a variety of onyx marble (§§ 59 ff.).

[b] Sejanus, prefect of the praetorian guard under Tiberius, was executed in A.D. 31. He no doubt restored the temple. According to Juvenal (X. 74), he was a devotee of Nortia, the Etruscan goddess of luck.

[c] Brought to Rome as a hostage by Julius Caesar, he became King of Mauretania under Augustus. He was a prolific writer and is constantly cited by Pliny. The Juba mentioned on p. 90, n. [a] was his father.

[d] See § 54 for the Naxian and Armenian whetstones, both

translucent. In token of its appearance it was called 'phengites' or the 'Luminary Stone.'[a] Of this stone Nero rebuilt the temple of Fortune, known as the shrine of Sejanus,[b] but originally consecrated by King Servius Tullius and incorporated by Nero in his 578–535 B.C. Golden House. Thanks to this stone, in the daytime § 111. it was as light as day in the temple, even when the doors were shut; but the effect was not that of windows of specular stone, since the light was, so to speak, trapped within rather than allowed to penetrate from without. According to Juba,[c] there exists in Arabia too a stone that is transparent like glass, and is used as window panes.

Whetstones.

XLVII. It is now high time to pass on to stones used in industry, and first of all to whetstones intended for sharpening iron. Of these there are many varieties. Cretan whetstones for long enjoyed the highest reputation, the second place being held by the Laconian from Mount Taygetus. Both kinds need to be lubricated with oil. Among those used with water the Naxian came first in merit, and then the Armenian,[d] both of which were mentioned § 54. earlier. Cilician whetstones are effective if used with oil and water mixed, and those of Arsinoe[e] if used with water alone. In Italy too there have been discovered whetstones which, when used with water, extract a sharp edge and operate most keenly, as well as beyond the Alps, where they are known as

of which were emery. Of the rest, some were probably siliceous slate, a material commonly used for the purpose.

[e] Several towns were so named. One was in Cilicia, so that the whetstone in question may have been a variety of the Cilician.

passernices vocant. quarta ratio est saliva hominis proficientium in tonstrinarum officinis.[1] Laminitanae ex Hispania citeriore in eo genere praecipuae.

166 XLVIII. E reliqua multitudine lapidum tofus aedificiis inutilis est mortalitate, mollitia.[2] quaedam tamen loca non alium habent, sicuti Carthago in Africa. exestur halitu maris, fricatur[3] vento, everberatur imbri. sed cura tuentur picando parietes, quoniam et tectorii calce eroditur, sciteque dictum est ad tecta eos pice, ad vina calce uti, quoniam sic
167 musta condiunt. alia mollitia circa Romam Fidenati et Albano. in Umbria quoque et Venetia albus lapis dentata serra secatur. hi tractabiles in opere laborem quoque tolerant, sub tecto dumtaxat; aspergine et gelu pruinisque rumpuntur in testas, nec contra auram maris robusti. Tiburtini, ad reliqua fortes, vapore dissiliunt.

[1] *post* officinis *add.* inutilis est (inutilis *Gelen, Sillig*) fragili mollitia *edd. vett., Sillig*: *om.* Bdh *Mayhoff.*
[2] mortalitate mollitia B: mollitia *om.* FdTh *et glossema esse suspicatur Mayhoff.*
[3] fricatur B[2] *Sillig*: friatur B[1] *Mayhoff*: friatum F.

[a] These may be the fine, hard water hones, consisting of a slaty mica-schist, produced at Sonneburg, Thuringia. They may, however, be the well-known yellow razor hones found at Regensburg, Bavaria, and also at several places in Belgium. The word *passernices* may be Celtic, but it has not been satisfactorily explained, and may be pre-Indo-European.
[b] No doubt ironical. The bluntness of razors in barbers' shops was notorious. See for example Martial XI. 84.
[c] As opposed to Nova Carthago (Cartagena) in Spain. Pliny limits *tofus* to *soft* tufas. The hard varieties are *silex* (§ 168).

'passernices.'[a] The fourth method of operation is that adopted for the hones which are so useful in barbers' shops—lubrication by means of human saliva.[b] The Laminitanian hones from Hither Spain are outstanding in this class.

XLVIII. Of the numerous stones that remain to *Tufa.* be considered, tufa is unsuitable for building construction because of its short life and its softness. However, some localities, for example Carthage in Africa,[c] have no other stone to offer. It is eaten away by evaporation from the sea, rubbed by wind, and lashed and scarred by rain. But the Carthaginians are careful to protect their house walls by coating them with pitch; for lime plaster is another thing that erodes tufa. Hence the witty remark that people there treat their buildings with pitch and their wine with lime,[d] since that is how they temper their new wine. Other soft varieties are found near Rome in the neighbourhood of Fidenae and Alba.[e] In Umbria and Venetia, moreover, there is a white stone that can be cut with a toothed saw. These stones, besides being easy to work, can also bear a heavy load,[f] provided that they are under cover. When exposed to spray, frost or rime they break up into slabs, nor do they show much resistance to sea breezes. Travertine is split by heat, although it § 46.
stands up to all other forces.

[d] Thus reversing the usual practice.
[e] The stone quarried at Fidenae, 5 miles north of Rome, was a soft calcareous tufa. *Lapis Albanus*, from the Alban Hills, was peperino, a greyish brown tufa with black spots like peppercorns, valued because it was resistant to fire.
[f] Bailey translates 'resist wear.'

168 XLIX. Nigri silices optimi, quibusdam in locis et
rubentes. nonnusquam vero et albi, sicut in Tar-
quiniensi Anicianis lapicidinis circa lacum Volsinien-
sem et in Statoniensi, quibus ne ignes [1] quidem
nocent.[2] iidem et in monimentis scalpti contra
vetustatem quoque incorrupti permanent; ex iis
169 formae fiunt in quibus aera funduntur. est et
viridis lapis vehementer igni resistens, sed nusquam
copiosus et, ubi invenitur, lapis, non saxum, est.
e reliquis pallidus in caemento raro utilis, globosus
contra iniurias fortis, sed structurae infidelis, nisi
multa suffrenatione devinctus. nec certior fluviatilis,
170 semper veluti madens. L. Remedium est in lapide
dubio [3] aestate eum eximere nec ante biennium
inserere tecto, domitum tempestatibus. quae ex eo
laesa fuerint, subterraneae structurae aptentur
utilius; quae restiterint, tutum est vel caelo com-
mittere.
171 LI. Graeci e lapide duro aut silice aequato struunt
veluti latericios parietes. cum ita fecerunt, iso-
domon vocant genus structurae; at cum inaequali

[1] ignes B²dT *Sillig*: ignis B¹Fh, *edd. vett.*, *Mayhoff*.
[2] nocent BFdT *Sillig*: nocet h *edd. vett.*: noceat *Mayhoff*.
[3] dubio *codd.*: rubro *Hardouin e Vitruv. II.7.5.*

---

[a] In this passage *silex* is used of hard Italian tufas. The black and red were volcanic tufas.

[b] Hard white calcareous tufa.

[c] Here *silex* no doubt includes marble (*cf.* § 135, *Luniensem silicem*) and hard limestone.

XLIX. The best silex[a] is the black variety, although in certain localities it is the red that is best, and in several places even the white, as in the Anician quarries round Lake Bolsena near Trachina or, again, in the neighbourhood of Statonia, the stone from these two places being immune even to fire.[b] The same two varieties are, moreover, used for sculpture on monuments, where they offer the added advantage of remaining untouched by the ravages of time. Of these stones are made the moulds in which bronze implements are cast. There is also a green stone that strongly resists fire, but it is nowhere plentiful and, where it is found, occurs in pieces and not in a mass. Of the remaining varieties, the pale silex can only occasionally be used for rough walling, while the rounded kind stands up to hard abuse, but is unreliable for building purposes unless it is bonded with large quantities of mortar. The silex found in rivers is no more reliable, always giving the impression of being thoroughly damp. *Silex.*

L. When stone is of doubtful quality the remedy is to quarry it in the summer and to lay it only after it has been subjected to weathering for at least two years. Those stones of this class that have been damaged by such treatment may be more profitably incorporated in masonry lying below ground-level, while those that have withstood weathering can be safely exposed even to the sky.

LI. The Greeks build house-walls, as though they were using brick, of hard stone or silex[c] dressed to a uniform thickness. When they follow this procedure the style of masonry is what they call 'isodomos,' or 'masonry with equal courses.' When the courses *Types of masonry.*

crassitudine structa sunt coria, pseudisodomon. tertium est emplecton; tantummodo frontibus
172 politis reliqua fortuita[1] conlocant. alternas coagmentationes fieri, ut commissuras antecedentium medii lapides optineant, necessarium est, in medio quoque pariete, si res patiatur; si minus, utique a lateribus. medios parietes farcire fractis caementis diatonicon[2] vocant. reticulata structura, qua frequentissime Romae struunt, rimis opportuna est. structuram ad normam et libellam fieri, ad perpen-
173 diculum respondere oportet. LII. cisternas harenae purae asperae[3] v partibus, calcis quam vehementissimae[4] II construi, fragmentis silicis non excedentibus libras; ita ferratis vectibus calcari solum parietesque similiter. utilius geminas esse, ut in priore vitia considant atque per colum in proximam transeat pura aqua.

174 LIII. Calcem e vario lapide Cato censorius inprobat; ex albo melior. quae ex duro, structurae utilior; quae ex fistuloso, tectoriis; ad utrumque damnatur ex silice. utilior eadem effosso lapide quam ex ripis fluminum collecto, utilior[5] e molari,

[1] fortuita B²: fortuito B¹Fdh *edd. vett.*
[2] diatonicon *Ianus* (*coll. Vitruv. II.8.7*): diatonichon B: diatoichon *Sillig e priore coni. Iani.*
[3] asperae B: et asperae *edd. vett.*
[4] vehementissimae *edd.*: vehementissime Bdh.
[5] vilior *pro* utilior *coni. Mayhoff.*

---

[a] This was really a reinforced variety of *emplectos*. Pliny has distorted the account given by Vitruvius (II. 8. 7), who shows that these blocks were *lateres diatoni*, band-stones stretching from wall to wall.
[b] *Opus reticulatum*, faced with lozenge-shaped stones.
[c] Here *silex* is hard, calcareous tufa.

laid are of varying thickness the style is known as 'pseudisodomos,' a spurious variety of the former. A third style is the 'emplectos' or 'interwoven,' in which only the faces are dressed, the rest of the material being laid at random. It is essential that joints should be made to alternate in such a way that the middle of a stone covers the vertical joint in the course last laid. This should be done even in the core of the wall if circumstances permit, and failing this, at least on the faces. When the core of the wall is packed with rubble, the style is 'diatonicos,' 'with single stones stretching from face to face.'[a] 'Network masonry,'[b] which is very commonly used in buildings at Rome, is liable to crack. All masonry should be laid to rule and level, and should be absolutely perpendicular when tested with a plummet.

LII. Cisterns should be made of five parts of clean, *Cisterns.* coarse sand to two of the hottest possible quicklime, together with pieces of silex each weighing not more than a pound. The floor and walls built of this material should all alike be beaten with iron bars. It is better to build cisterns in pairs so that impurities may settle in the first, and water pass through a filter purified into the adjoining one.

LIII. As for lime, Cato the censor disapproves of *Lime.* preparing it from variegated limestone, for white limestone produces a better quality. Lime made from a hard stone is more effective for walling, while that made from porous limestone is more suitable for plastering. Lime manufactured from silex[c] is condemned for both purposes. Again, it is more serviceable if it is produced from quarried stone than from stones collected on the banks of rivers. A superior

quia est quaedam pinguior natura eius. mirum
aliquid, postquam arserit, accendi aquis. LIV.
175 Harenae tria genera: fossicia, cui quarta pars calcis
addi debet, fluviatili aut marinae tertia. si et testae
tusae tertia pars addatur, melior materia erit. ab
Appennino ad Padum non invenitur[1] fossicia, nec
176 trans maria. LV. Ruinarum urbis ea maxume
causa, quod furto calcis sine ferumine suo caementa
componuntur. intrita quoque ea quo vetustior, eo
melior. in antiquorum[2] aedium legibus invenitur,
ne recentiore trima uteretur redemptor; ideo
nullae[3] tectoria eorum rimae foedavere. tectorium,
nisi quod ter harenato et bis marmorato inductum
est, numquam satis splendoris habet. uliginosa et
177 ubi salsugo vitiet[4] testaceo sublini utilius. in
Graecia[5] tectoriis etiam harenatum quo inducturi
sunt prius in mortario ligneis vectibus subigunt.
experimentum marmorati est in subigendo, donec

[1] non invenitur *aliquot codd., Mayhoff, coll. Vitruv. II.6.5*: invenitur B.

[2] antiquorum B: antiquarum dh *edd. vett.*

[3] nullae B: nulla adh *edd. vett.*

[4] vitiet *Mayhoff*: vitiat *Hermolaus Barbarus*: vitia at B: vitia Fdh.

[5] Graecia Fdha: Greciae B: Graeciae *Sillig.*

---

[a] Millstones were usually made of lavas. Here, however, a rough limestone is meant.

[b] When limestone is burnt at about 900° C. quicklime is formed; and this if sprinkled with water forms slaked lime. 'The reaction is very exothermic' (Bailey).

[c] Like pozzolana (§ 70 and p. 55, n. [b]), crushed potsherds, bricks or tiles rendered the mortar stronger and more resistant to water by adding silica to it.

kind is made from stones used for querns,[a] for they have a certain unctuous character. Lime possesses one remarkable quality: once it has been burnt, its heat is increased by water.[b]

LIV. Of sand, there are three varieties: there is *Sand.* quarry sand, to which has to be added one-quarter of its weight in lime; and river or alternatively sea sand, to which must be added one-third. If one-third of crushed potsherds also is added, the material will be improved.[c] No quarry sand is found from the Apennines as far as the Po, nor does it occur overseas. LV. The chief reason for the collapse of buildings in Rome is the purloining of lime, as the result of which the rough stones are laid on each other without any proper mortar. It is also a fact that the slurry improves with keeping.[d] In the old building laws is to be found a regulation that no contractor is to use a slurry that is less than three years old. Consequently, old plaster work was never disfigured by cracks. Stucco never possesses the required brilli- *Stucco.* ance unless three coats of sand mortar[e] and two of marble stucco[f] are laid on. Buildings exposed to damp or erected in a locality where they may be affected by moisture from the sea may with profit be given an undercoat of plaster made from pounded potsherds. In Greece sand mortar for plaster work is, furthermore, worked up in a trough with wooden poles before it is spread. The test for ascertaining that marble stucco has been worked to the correct con-

[d] The slurry (*calx intrita*) is the mixture of lime, sand and water. It would be kept to allow complete slaking (not **3** years?).

[e] A mortar or plaster made of sand, lime and water (Bailey).

[f] Stucco made of powdered marble, lime and water (Bailey).

rutro non cohaereat; contra in albario opere, ut macerata calx ceu glutinum haereat; macerari non nisi ex glaeba [1] oportet. Elide aedis est Minervae, in qua frater Phidiae Panaenus tectorium induxit lacte [2] et croco subactum, ut ferunt; ideo, si teratur hodie in eo saliva pollice, odorem croci saporemque reddit.

178 LVI. Columnae eaedem densius positae crassiores videntur. genera earum quattuor: quae sextam partem altitudinis in crassitudine ima habent, Doricae vocantur; quae nonam, Ionicae; quae septimam, Tuscanicae; Corinthiis eadem ratio quae Ionicis, set differentia, quoniam capitulis Corinthiarum eadem est altitudo quae colligitur crassitudine ima, ideoque graciliores videntur; Ionicis enim capituli altitudo tertia pars est crassitudinis.

179 antiqua ratio erat columnarum altitudinis tertia pars latitudinum delubri. in Ephesiae Dianae aede, quae prius fuit, primum columnis spirae subditae et capitula addita, placuitque altitudinis octava pars in crassitudine et ut spirae haberent crassitudinis dimidium septimaeque partes detraherentur sum-

[1] ex glaeba FdhL: glaeba B: glaebam *Ianus*.
[2] lacte et Fdha: late e B: lacte e *Ianus*: tale e *coni. Mayhoff*.

[a] This digression is due to an association of ideas. In Greece it was a common practice to apply marble stucco to columns, unless they were of marble. Pliny's figures are, of course, theoretical.

sistency is that it should no longer stick to the trowel, while in whitewashing the test is that the slaked lime should stick like glue. Slaking should always be carried out when the lime is in lumps. At Elis there is a temple of Minerva in which, it is said, Panaenus, the brother of Pheidias, applied plaster that had been worked with milk and saffron. The result is that even to-day, if one wets one's thumb with saliva and rubs it on the plaster, the latter still gives off the smell and taste of saffron.

LVI. As for columns,[a] identical ones appear to increase in thickness merely by being placed more closely together. There are four kinds of columns. Columns the height of which is six times their lower diameter are the so-called Doric. Those in which the height is nine times the lower diameter are the Ionic; and those in which it is seven times the Tuscan. Corinthian columns have the same proportions as the Ionic except that the height of the Corinthian capitals equals the lower diameter, so that they appear to be more slender than the Ionic, where the height of the capital is a third of the lower diameter. In ancient times a proportion observed was that the breadth of a temple should be three times the height of the columns. It was in the earlier temple of Diana at Ephesus [b] that columns were for the first time mounted on moulded bases and crowned with capitals, and it was decided that the lower diameter of the columns should be one-eighth of their height, that the height of the moulded bases should be one-half of the lower diameter and that the lower diameter should exceed the upper diameter by a *Columns.*

[b] Erected during the reign of Croesus (560–546 B.C.).

marum crassitudine. praeter haec sunt quae vocantur Atticae columnae quaternis angulis, pari laterum intervallo.

180 LVII. Calcis et in medicina magnus usus. eligitur recens nec aspersa aquis. urit, discutit, extrahit incipientesque serpere[1] ulcerum impetus coercet; aceto et rosaceo mixta atque inlita, mox cera ac rosaceo temperata perducit ad cicatricem. luxatis quoque cum liquida resina aut adipe suillo ex melle medetur, eadem compositione et strumis.

181 LVIII. Maltha e calce fit recenti. glaeba vino restinguitur, mox tunditur cum adipe suillo et fico,[2] duplici lenimento.[3] quae res omnium tenacissima et duritiam lapidis antecedens. quod malthatur, oleo perfricatur ante.

182 LIX. Cognata calci res gypsum est. plura eius genera. nam et e lapide coquitur, ut in Syria ac Thuriis, et e terra foditur, ut in Cypro ac Perrhaebia; e summa tellure et Tymphaicum est. qui coquitur

[1] serpere *codd.*: serpentium *Mayhoff.*
[2] fico B *cod. Poll.*: ficu dh *edd. vett.*: pice *coni. Mayhoff, coll. Palladio I.17.3.*
[3] lenimento *Sillig* (*e coni. Iani*): lenamento *aut* liniamento *aut* linamento *codd.*: linimento *coni. Hardouin.*

[a] Apparently a hard plaster used especially for the walls of baths.

[b] Pliny is drawing largely on Theophrastus (*de Lap.* 64, 65, 69), who, however, does not clearly distinguish gypsum the mineral (hydrous calcium sulphate) from dehydrated gypsum (plaster of Paris) obtained by heating the mineral so as to cause it to lose three quarters of its water. The gypsum of Cyprus, Perrhaebia and Tymphaea was the mineral, and that of Syria and Thurii plaster of Paris obtained by heating the mineral. Bailey suggests that the gypsum of Tymphaea was

seventh. Another kind of column is that known as the Attic, which is quadrangular and equilateral.

LVII. Lime is commonly used also in pharmacy, preferably when freshly calcined and unslaked. It has caustic, dispersive and drawing effects, and checks an onset of ulcers which shows signs of spreading quickly. It brings about the formation of scars when it is mixed as a liniment with vinegar and rose oil and is later blended with wax and rose oil. It is a cure also for dislocations when applied with liquid resin or pork fat mixed with honey, and the same mixture, moreover, cures scrofulous sores.

LVIII. Maltha[a] is prepared from freshly calcined lime, a lump of which is slaked in wine and then pounded together with pork fat and figs, both of which are softening agents. Maltha is the most adhesive of substances and grows harder than stone. Anything that is treated with it is first thoroughly rubbed with olive oil. *Maltha.*

LIX. There is an affinity between lime and gypsum,[b] a substance of which there are several varieties. For it can be produced from a heated mineral, as in Syria and Thurii; it can be dug from the earth, as in Cyprus and Perrhaebia. There is also that of Tymphaea, which is stripped from the earth's surface. The mineral that is heated ought *Gypsum.*

a fullers' earth because Theophrastus states that it was used for cleaning clothes, a purpose for which gypsum in the ordinary sense of the term would be unsuitable. In fact, Theophrastus states merely that it was used 'for cloaks.' Later he adds that gypsum in general is *sprinkled* on cloaks by fullers, a remark which implies that it was used not for cleaning cloaks, but for *whitening* them. Powdered dehydrated gypsum would have served this purpose well.

lapis non dissimilis alabastritae esse debet aut marmoroso. in Syria durissimos ad id eligunt cocuntque cum fimo bubulo, ut celerius urantur. omnium autem optimum fieri compertum est e lapide
183 speculari squamamve talem habente. gypso madido statim utendum est, quoniam celerrime coit; tamen rursus tundi se et in farinam resolvi patitur. usus gypsi in albariis, sigillis aedificiorum et coronis gratissimus. exemplum inlustre[1] C. Proculeium, Augusti Caesaris familiaritate subnixum, in stomachi dolore gypso poto conscivisse sibi mortem.

184 LX. Pavimenta originem apud Graecos habent elaborata arte[2] picturae ratione, donec lithostrota expulere eam. celeberrimus fuit in hoc genere Sosus, qui Pergami stravit quem vocant asaroton oecon, quoniam purgamenta cenae in pavimentis quaeque everri solent velut relicta fecerat parvis e tessellis tinctisque in varios colores. mirabilis ibi columba bibens et aquam umbra capitis infuscans; apricantur aliae scabentes sese in canthari labro.

185 LXI. Pavimenta credo primum facta quae nunc

[1] inlustre *codd.* ha *edd. vett.*, *Sillig*: inlustrem BFdL: inlustre est *Mayhoff*.
[2] arte *codd.*: ante *Detlefsen*: tarda *coni. Mayhoff*.

[a] *I.e.*, selenite (see § 160 and p. 126, n. [d]), which is a variety of gypsum.
[b] These were probably attached to moulded panels.
[c] *Pavimenta* seem to have included floors of beaten earth, clay or stone, and tessellated pavements.

to be like onyx marble or crystalline limestone. In Syria the hardest stones possible are selected for the purpose and are heated along with cow dung so that the burning may be accelerated. However, it has been discovered that the best kind is prepared from specular stone[a] or from stone that flakes in the same way. Gypsum, when moistened, should be used instantly, since it coheres with great rapidity. However, there is nothing to prevent it from being pounded and reduced again to a fine powder. Gypsum is a serviceable whitewash and is used with pleasing effect for making moulded figures and festoons[b] in architecture. A famous story carries with it something of a warning: we are told that Caius Proculeius, a man who could rest assured of his close friendship with the Emperor Augustus, committed suicide by swallowing gypsum when he was suffering from severe pains in the stomach.

LX. Paved floors[c] originated among the Greeks *Paved floors.* and were skilfully embellished with a kind of paintwork until this was superseded by mosaics. In this latter field the most famous exponent was Sosus, who at Pergamum laid the floor of what is known in Greek as 'the Unswept Room' because, by means of small cubes tinted in various shades, he represented on the floor refuse from the dinner table and other sweepings, making them appear as if they had been left there. A remarkable detail in the picture is a dove, which is drinking and casts the shadow of its head on the water, while others are sunning and preening themselves on the brim of a large drinking vessel.

LXI. The original paved floors, in my belief, were

vocamus barbarica atque subtegulanea, in Italia festucis pavita. hoc certe ex nomine ipso intellegi potest. Romae scutulatum [1] in Iovis Capitolini aede primum factum est post tertium bellum Punicum initum, frequentata vero pavimenta ante Cimbricum magna gratia animorum indicio est Lucilianus ille versus:

Arte pavimenti atque emblemate vermiculato.

186 LXII. Subdialia Graeci invenere talibus domos contegentes, facile [2] tractu tepente, sed fallax ubicumque imbres gelant. necessarium binas per diversum coaxationes [3] substerni et capita earum praefigi, ne torqueantur, et ruderi novo tertiam partem testae tusae addi, dein rudus, in quo II quintae calcis misceantur, pedali crassitudine festu-
187 cari, tunc nucleo crasso VI digitos induci, tessella grandi non minus alta II digitos strui, fastigium vero servari in pedes denos sescunciae ac diligenter cote despumari. quernis axibus contabulari, quia torquentur,[4] inutile putant, immo et felice aut palea substerni melius esse, quo minor vis calcis perveniat.

[1] scutulatum *Sillig e coni. Iani*: scutolatum B: scalpturatum FdhL.
[2] facile Ba: *om.* FdThL: genus facile *Urlichs, Mayhoff.*
[3] coaxationes *Detlefsen* (*coll. Vitruv. VII.1.2*): coationes B: taxationes dh *edd. vett.*
[4] torquentur *aliquot codd.*: torqueantur h *Sillig.*

[a] Pliny hints at a connection between *pavire*, 'to beat,' and *pavere*, 'to be struck with fear.'

those now known to us as 'foreign' and 'indoor floors. In Italy these were beaten with staves: at any rate, this is what the name itself may imply.[a] At Rome the first floor with a diamond pattern was constructed in the temple of Jupiter Capitolinus after the beginning of the Third Punic War; but tessellated 149 B.C. pavements had already become common and extremely popular before the Cimbrian War, as is shown 113–101 B.C. by the famous verse from Lucilius: c. 180–102 B.C.

With paviour's skill and wavy inset stones.

Flat, paved roofs.

LXII. Open-air flooring was an invention of the Greeks, who roof their houses in this way, an easy method to use in regions with a warm climate, but unreliable wherever there is heavy rainfall and frost. It is essential that two sets of joists should be laid across each other, and that their ends should be nailed down to avoid warping. To fresh rubble should be added a third of its weight in pounded potsherds; and then the rubble, mixed with two-fifths of its weight in lime, should be rammed down to a thickness of one foot. After this, a final coat [b] $4\frac{1}{2}$ inches thick must be applied to the rubble and large square stones not less than $1\frac{1}{2}$ inches thick laid on it. A fall of $1\frac{1}{2}$ inches in 10 feet should be maintained and the surface carefully polished with grindstones. It is considered impracticable to lay the wood floor with oak planks, because they warp; and, furthermore, it is thought advisable to spread a layer of fern or straw below the rubble so that the worst effects of the quicklime may not reach the planks. It is essential also to lay a foundation of round pebbles

[b] Lit. 'core.'

necessarium et globosum lapidem subici. similiter
188 fiunt spicata testacea. LXIII. Non neglegendum est etiamnum unum genus Graecanici: solo festucato inicitur rudus aut testaceum pavimentum, dein spisse calcatis carbonibus inducitur ex sabulo et calce ac favilla mixtis materia crassitudine semipedali, ad regulam et libellam exigitur, et est forma terrena; si vero cote depolitum est, nigri pavimenti usum optinet.

189 LXIV. Lithostrota coeptavere iam sub Sulla; parvolis certe crustis exstat hodieque quod in Fortunae delubro Praeneste fecit. pulsa deinde ex humo pavimenta in camaras transiere vitro.[1] novicium et hoc inventum; Agrippa certe in thermis quas Romae fecit figlinum opus encausto pinxit in calidis, reliqua albario adornavit, non dubie vitreas facturus camaras, si prius inventum id fuisset aut a parietibus scaenae, ut diximus, Scauri pervenisset in camaras. quam ob rem et vitri natura indicanda est.

190 LXV. Pars Syriae, quae Phoenice vocatur, finitima Iudaeae intra montis Carmeli radices paludem habet, quae vocatur Candebia.[2] ex ea creditur nasci Belus amnis quinque milium passuum spatio in mare

[1] vitro *Mayhoff*: utro B: ut pro *ceteri codd.*: e vitro *Gelen.*

[2] Candebia B[1] *Ianus*: Candevia *aut* Candebea *ceteri codd.*: Cendebia *Sillig.*

---

[a] Lit. 'like wheat-ears,' because the stones were laid at an angle to each other, so as to resemble the arrangement of the grains in an ear of wheat.

[b] Pliny is presumably referring to the earliest use of mosaic floors in Italy. Sulla was dictator from 82 to 79 B.C.

under the rubble. Tiled floors with a herring-bone[a] pattern are constructed in a similar fashion. LXIII. There is still one kind of floor that we must not fail to mention, namely the *Graecanicum* or 'Greek style.' The ground is well rammed and rubble or a layer of pounded potsherds laid on it. Then charcoal is trodden into a compact mass, and on top of this is spread a mixture of coarse sand, lime and ashes to a thickness of 6 inches. This is carefully finished to rule and level, and has the appearance of earth. But if it is smoothed with a grindstone it will pass for a black stone floor.

LXIV. Mosaics came into use as early as Sulla's régime.[b] At all events, there exists even to-day one made of very small cubes which he installed in the temple of Fortune at Palestrina. After that, ordinary tessellated floors were driven from the ground level and found a new home in vaulted ceilings, being now made of glass. Here too we have a recent invention. At any rate, Agrippa, in the baths that he built at Rome, painted the terra-cotta work of the hot rooms in encaustic and decorated the rest XXXV. 149.
with whitewash, although he would certainly have built vaults of glass if such a device had already been invented or else had been extended from the walls of a stage, such as that of Scaurus which we have § 114.
described, to vaulted ceilings. And so we must now proceed to explain also the nature of glass.

LXV. That part of Syria which is known as *Glass.* Phoenicia and borders on Judea contains a swamp called Candebia amid the lower slopes of Mount Carmel. This is supposed to be the source of the River Belus, which after traversing a distance of

perfluens iuxta Ptolemaidem coloniam. lentus hic cursu, insaluber potu, sed caerimoniis sacer, limosus, vado profundus, non nisi refuso mari harenas fatetur; fluctibus enim volutatae nitescunt detritis sordibus.
191 tunc et marino creduntur adstringi morsu, non prius utiles. quingentorum est passuum non amplius litoris spatium, idque tantum [1] multa per saecula gignendo fuit vitro. fama est adpulsa nave mercatorum nitri, cum sparsi per litus epulas pararent nec esset cortinis attollendis lapidum occasio, glaebas nitri e nave subdidisse, quibus accensis, permixta harena litoris, tralucentes novi liquoris fluxisse rivos,
192 et hanc fuisse originem vitri. LXVI. mox, ut est ingeniosa sollertia, non fuit contenta nitrum miscuisse; coeptus addi et magnes lapis, quoniam in se liquorem vitri quoque ut ferrum trahere creditur. simili modo et calculi splendentes multifariam coepti

[1] tantum *codd.*: tantulum *coni. Mayhoff.*

---

[a] Acre.

[b] The fact that this beach was an important source of sand for glass-making at Sidon and elsewhere no doubt gave rise to the somewhat improbable story that follows. The sand is now once more being used in the glass industry recently established at Haifa.

[c] *Nitrum* is a natural mixture of sodium carbonate and sodium bicarbonate.

[d] Glass is made by fusing together silica (usually in the form of sand), an alkali (usually soda) and an alkaline earth (generally lime). Impurities in the sand may have provided the lime which Pliny omits to mention in his version of the story. Without lime only water-glass would have been produced (Bailey). But there are other difficulties in the story. Could an open camp-fire have fused the materials?

[e] Bailey suggests that this *magnes lapis* was not magnetite,

5 miles flows into the sea near the colony of Ptolemais.[a] Its current is sluggish and its waters are unwholesome to drink, although they are regarded as holy for ritual purposes. The river is muddy and flows in a deep channel, revealing its sands only when the tide ebbs. For it is not until they have been tossed by the waves and cleansed of impurities that they glisten. Moreover, it is only at that moment, when they are thought to be affected by the sharp, astringent properties of the brine, that they become fit for use. The beach stretches for not more than half a mile, and yet for many centuries the production of glass depended on this area alone.[b] There is a story that once a ship belonging to some traders in natural soda [c] put in here and that they scattered along the shore to prepare a meal. Since, however, no stones suitable for supporting their cauldrons were forthcoming, they rested them on lumps of soda from their cargo. When these became heated and were completely mingled with the sand on the beach a strange translucent liquid flowed forth in streams; and this, it is said, was the origin of glass.[d] LXVI. Next, as was to be expected, Man's inventive skill was no longer content to mix only soda with the sand. He began to introduce the magnet stone [e] also, since there is a belief that it attracts to itself molten glass no less than iron. Similarly, lustrous stones [f] of many kinds came to be burnt with the melt and, then again,

but magnesian limestone or dolomite used as a source of lime. Similarly, the shells mentioned in the next sentence would provide lime.

[f] Perhaps silica in the form of crushed quartz.

uri, dein conchae ac fossiles harenae. auctores sunt in India et crystallo fracta fieri et ob id nullum
193 conparari Indico. levibus autem aridisque lignis coquitur addito Cyprio[1] ac nitro, maxime Aegyptio.[2] continuis fornacibus ut aes liquatur, massaeque fiunt colore pingui nigricantes. acies tanta est quacumque ut citra sensum ullum ad ossa consecet quidquid adflaverit[3] corporis. ex massis rursus funditur in officinis tinguiturque, et aliud flatu figuratur, aliud torno teritur, aliud argenti modo caelatur, Sidone quondam his officinis nobili, siquidem etiam specula excogitaverat.

194 Haec fuit antiqua ratio vitri. iam vero et in Volturno amne Italiae harena alba nascens sex milium passuum litore inter Cumas atque Liternum, qua mollissima est, pila molave teritur. dein miscetur III partibus nitri pondere vel mensura ac liquata in alias fornaces transfunditur. ibi fit massa quae vocatur hammonitrum atque haec recoquitur et fit vitrum purum ac massa vitri candidi. iam vero et per Gallias Hispaniasque simili modo harena

[1] Cyprio dh *edd. vett., Sillig, K. C. Bailey*: cypro BT *Ianus, Mayhoff.*

[2] Aegyptio *Mayhoff (ex coni. Iani, coll. XXXI.109)*: Ophirio dhL *edd. vett., Sillig, K. C. Bailey*: ofirio FT: Cyprio B: aphronitro *coni. Hardouin.*

[3] adflaverit BL *edd.*: adfluerit F: affluerit dh: adflixerit *coni. Mayhoff.*

[a] The reading is uncertain.

[b] There would be three processes, some or all of which might be carried out in different furnaces: the first firing (fritting, at a comparatively low temperature), the second firing (melting) and slow cooling (annealing).

shells and quarry sand. Authorities state that in India glass is made also of broken rock-crystal and that for this reason no glass can compare with that of India. To resume, a fire of light, dry wood is used for preparing the melt, to which are added copper and soda, preferably Egyptian soda.[a] Glass, like copper, is smelted in a series of furnaces,[b] and dull black lumps are formed. Molten glass is everywhere so sharp that, before there is the least sensation, it cuts to the bone any part of the body on which it splutters.[c] After being reduced to lumps, the glass is again fused in the workshop and is tinted. Some of it is shaped by blowing,[d] some machined on a lathe and some chased like silver. Sidon was once famous for its glassworks, since, apart from other achievements, glass mirrors were invented there.

This was the old method of producing glass. Now, however, in Italy too a white sand which forms in the River Volturno is found along 6 miles of the seashore between Cuma and Literno. Wherever it is softest, it is taken to be ground in a mortar or mill. Then it is mixed with three parts of soda, either by weight or by measure, and after being fused is taken in its molten state to other furnaces. There it forms a lump known in Greek as 'sand-soda.' This is again melted and forms pure glass, and is indeed a lump of clear colourless glass. Nowadays sand is similarly blended also in the Gallic and Spanish

[c] This may be the meaning of *adflaverit* in the present context None of the alternative readings is convincing.

[d] Glass-blowing, in contrast to glass-moulding, was a comparatively late development, introduced about the middle of the 1st century B.C. or even later.

195 temperatur. ferunt Tiberio principe excogitato vitri temperamento, ut flexile esset, totam officinam artificis eius abolitam ne aeris, argenti, auri metallis pretia detraherentur, eaque fama crebrior diu quam certior fuit. sed quid refert, Neronis principatu reperta vitri arte quae modicos calices duos quos appellabant petrotos[1] HS $\overline{\text{VI}}$ venderet?

196 LXVII. In genere vitri et obsiana[2] numerantur ad similitudinem lapidis quem in Aethiopia invenit Obsius,[3] nigerrimi coloris, aliquando et tralucidi, crassiore visu atque in speculis parietum pro imagine umbras reddente. gemmas multi ex eo faciunt; vidimus et solidas imagines divi Augusti capaci[4] materia huius crassitudinis, dicavitque ipse pro miraculo in templo Concordiae obsianos IIII elephan-
197 tos. remisit et Tiberius Caesar Heliopolitarum caerimoniis repertam in hereditate Sei eius[5] qui praefuerat Aegypto obsianam imaginem Menelai, ex qua apparet antiquior materiae origo, nunc vitri

[1] petrotos *codd.*: pterotos *Hermolaus Barbarus*.
[2] obsiana B: obsina d: obsidiana *cod. Poll., edd. vett.*; *et similiter fere deinceps.*
[3] Obsius B: Obsidius *codd.* da *edd. vett.*
[4] capaci B: capti dL *edd. vett.*
[5] Sei eius *M. Hertz*: Sei *Hirschfeld*: eius *codd.*

[a] Versions of the story occur also in Petronius *Satyricon* 51 and Dio Cassius LVII. 21, 7.

[b] Obsidian is vitreous in texture and usually black and opaque, although thin flakes of it are translucent. The word 'obsidian' is derived from the readings of certain inferior manuscripts in the present passage and elsewhere in Pliny.

[c] No doubt a statuette of a Pharaoh. From Homer onwards, Menelaus was linked in mythology with Egypt.

provinces. There is a story that in the reign of Tiberius there was invented a method of blending glass so as to render it flexible. The artist's workshop was completely destroyed for fear that the value of metals such as copper, silver and gold would otherwise be lowered. Such is the story, which, however, has for a long period been current through frequent repetition rather than authentic.[a] But this is of little consequence, seeing that in Nero's principate there was discovered a technique of glass-making that resulted in two quite small cups of the kind then known as 'petroti' or 'stoneware' fetching a sum of 6000 sesterces.

A.D. 14–37.

A.D. 54–68.

LXVII. In our classification of glass we include also 'obsian' ware, so named from its resemblance to the stone found by Obsius in Ethiopia. This stone is very dark in colour and sometimes translucent, but has a cloudier appearance than glass, so that when it is used for mirrors attached to walls it reflects shadows rather than images.[b] Gems are frequently made of it, and we have seen also the solid obsidian statues of Augustus of Revered Memory, for the substance can yield pieces bulky enough for this purpose. Augustus himself dedicated as a curiosity four elephants of obsidian in the temple of Concord, while the Emperor Tiberius for his part restored to the cult of the Sun-god at Heliopolis an obsidian statue of Menelaus[c] which he found included in a legacy from one Seius,[d] who had been governor of Egypt. This statue proves that the origin of the stone, which is nowadays misrepresented because of its similarity to the glass,

Obsidian.

[d] If the reading is right, this Seius was the father of Seianus (§ 163).

similitudine interpolata. Xenocrates obsianum lapidem in India et in Samnio Italiae et ad oceanum in
198 Hispania tradit nasci. fit et tincturae genere obsianum ad escaria vasa et totum rubens vitrum atque non tralucens, haematinum appellatum. fit et album et murrina aut hyacinthos sappirosque imitatum et omnibus aliis coloribus, neque est alia nunc sequacior materia aut etiam picturae accommodatior. maximus tamen honos in candido tralu-
199 centibus, quam proxima crystalli similitudine. usus vero [1] ad potandum argenti metalla et auri pepulit. est autem caloris inpatiens, ni praecedat frigidus liquor, cum addita aqua vitreae pilae sole adverso in tantum candescant ut vestes exurant. fragmenta teporata adglutinantur tantum, rursus tota fundi non queunt praeterquam abruptas [2] sibimet in guttas,[3] veluti cum calculi fiunt quos quidam ab oculis appellant, aliquos et pluribus modis versicolores. vitrum sulpuri concoctum feruminatur in lapidem.
200 LXVIII. Et peractis omnibus quae constant in-

[1] vero *codd.*: eorum *Mayhoff.*
[2] abruptas *Mayhoff, K. C. Bailey*: abrupta B *edd. vett.*: abrupto *aut* abruto *aliquot codd.*
[3] in guttas B: tinguit has dL: tingit h: tingui *edd. vett.*

[a] Already mentioned at the beginning of § 196. An opaque black glass.
[b] Not, however, because of the small increase in the heat of the glass and of the liquid, but because of the concentration of the sun's rays.
[c] Reading, with Mayhoff, *abruptas sibimet in guttas*, but the text is uncertain and the sense doubtful.

is of an earlier date. Xenocrates records that obsi- XXXVII.
dian is found in India, in Italy within the territory 37.
of the Samnites and in Spain near the shores of the Atlantic. There is also the artificial 'obsian' glass[a] which is used as a material for tableware, this being produced by a colouring process, as is also the case with a completely red, opaque glass called in Greek 'blood-red ware.' There is, furthermore, opaque white glass and others that reproduce the appearance of fluor-spar, blue sapphires or lapis lazuli, and, indeed, glass exists in any colour. There is no other material nowadays that is more pliable or more adaptable, even to painting. However, the most highly valued glass is colourless and transparent, as closely as possible resembling rock-crystal. But although for making drinking vessels the use of glass has indeed ousted metals such as gold and silver, it cannot bear heat unless cold fluid is first poured into it; and yet glass globes containing water become so hot when they face the sun that they can set clothes on fire.[b] Pieces of broken glass can, when heated to a moderate temperature, be stuck together, but that is all. They can never again be completely melted except into globules separate from each other,[c] as happens in the making of the glass pebbles that are sometimes nicknamed 'eyeballs' and in some cases have a variety of colours arranged in several different patterns. Glass, when boiled with sulphur, coalesces into the consistency of stone.[d]

LXVIII. And now that we have described every-

[d] *Cf.* XXXI. 122, where this is said to happen to soda and sulphur. Pliny may have mistaken *nitrum* for *vitrum* in his source.

genio arte naturam[1] faciente, succurrit mirari nihil paene non igni perfici. accipit harenas, ex quibus aliubi vitrum, aliubi argentum, aliubi minium, aliubi plumbi genera, aliubi pigmenta, aliubi medicamenta fundit. igni lapides in aes solvuntur, igni ferrum gignitur ac domatur, igni aurum perficitur,
201 igni cremato lapide caementa in tectis ligantur. alia saepius uri prodest, eademque materia aliud gignit primis ignibus, aliud secundis, aliud tertiis, quando ipse carbo vires habere incipit restinctus atque interisse creditus maioris fit virtutis. inmensa, inproba rerum naturae portio et in qua dubium sit, plura absumat an pariat.

202 LXIX. Est et ipsis ignibus medica vis. pestilentiae quae obscuratione solis contrahitur, ignes si fiant, multifariam[2] auxiliari certum est. Empedocles et Hippocrates id demonstravere diversis locis. ad convolsa interiora viscera aut contusa, M. Varro—
203 ipsis enim verbis eius utar—pyxis sit, inquit, focus. inde enim cinis lixivus potus medetur. licet videre gladiatores, cum deluserunt, hac iuvari potione. quin et carbunculum, genus morbi quo duos consulares nuper absumptos indicavimus, querneus

[1] arte naturam Bdh: artem natura *cod. Poll., edd. vett.*
[2] multifariam *Detlefsen*: multiformia B: multiformiter ThL *edd. vett.*

[a] This is not true (see n. to XXXIII. 121). Pliny may be confusing cinnabar with red lead, which he regards also as *minium* (XXXIII. 119). Red lead is obtained by heating cerusite, which, however, is not a sand.
[b] That is, lead proper (*plumbum nigrum*) and tin (*plumbum album*).
[c] Limestone (§ 174).

thing that depends upon Man's talent for making Art reproduce Nature, we cannot help marvelling that there is almost nothing that is not brought to a finished state by means of fire. Fire takes this or that sand, and melts it, according to the locality, into glass, silver, cinnabar,[a] lead of one kind or another,[b] pigments or drugs. It is fire that smelts ore into copper, fire that produces iron and also tempers it, fire that purifies gold, fire that burns the stone[c] which causes the blocks in buildings to cohere. There are other substances that may be profitably burnt several times; and the same substance can produce something different after a first, a second or a third firing. Even charcoal itself begins to acquire its special property only after it has been fired and quenched: when we presume it to be dead it is growing in vitality. Fire is a vast, unruly element, and one which causes us to doubt whether it is more a destructive or a creative force.

LXIX. Fire even by itself has a curative power. It is well established that epidemics caused by an eclipse of the sun are alleviated in many ways by the lighting of bonfires. Empedocles and Hippocrates have proved this in various passages of their writings. 'For abdominal cramp or bruises,' states Marcus Varro, and I quote his very words, 'your hearth should be your medicine chest. Drink lye[d] made from its ashes, and you will be cured. One can see how gladiators after a combat are helped by drinking this.' Moreover, anthrax, a disease which, as I have mentioned, lately carried off two ex-consuls, may XXVI. 5.

[d] Lye, in this connection, is an alkaline fluid prepared by straining water through wood-ash or charcoal-ash.

carbo tritus cum melle sanat. adeo in rebus damnatis quoque ac iam[1] nullis sunt aliqua commoda, ut carbone ecce atque cinere.

204 LXX. Non praeteribo et unum foci exemplum Romanis litteris clarum: Tarquinio Prisco regnante tradunt repente in foco eius comparuisse genitale e cinere masculi sexus eamque quae insederat ibi, Tanaquilis reginae ancillam Ocresiam captivam, consurrexisse gravidam. ita Servium Tullium natum, qui regno successit. inde et in regia cubanti ei puero caput arsisse, creditumque Laris familiaris filium. ob id Compitalia ludos Laribus primum instituisse.

[1] iam dh: tam B *Sillig, Ianus*; *an recte?*

be cured by means of oak charcoal ground and mixed with honey. So true is it that there is some benefit to be found even in substances that are utterly rejected and have ceased to have any true existence, as we see here and now with charcoal and ashes.

LXX. I must not forget to mention one instance of a hearth that is famous in Roman literature. It is said that during the reign of Tarquinius Priscus 616–579 B.C.
there suddenly emerged from the ashes on his hearth a male genital organ,[a] and that a captive girl who was sitting there, Ocresia, a maidservant of Queen Tanaquil, rose from there in a state of pregnancy. According to the story, this was how Servius Tullius, who succeeded to the throne, came to be born. 578–535 B.C.
Afterwards, and likewise in the king's house, it is said that flames blazed round the child's head as he slept, and that he was therefore believed to be the son of the god who protected the household. Hence, we are told, he first founded the Festival of the Crossroads in honour of the gods who protect the community.

[a] This passage could very well be translated differently, but the rendering given here is supported by Dionysius of Halicarnassus IV. 2, 1, and Plutarch *de fortuna Romanorum* 10.

1 I. Ut nihil instituto operi desit, gemmae supersunt et in artum coacta rerum naturae maiestas, multis nulla[1] parte mirabilior. tantum tribuunt varietati, coloribus, materiae, decori, violare etiam signis, quae causa gemmarum est, quasdam nefas ducentes, aliquas vero extra pretia ulla taxationemque humanarum opum arbitrantes, ut plerisque ad summam absolutamque naturae rerum contemplationem satis sit una aliqua gemma.

2 Quae fuerit origo et a quibus initiis in tantum admiratio haec exarserit, diximus quadamtenus in mentione auri anulorumque. fabulae primordium a rupe Caucasi tradunt, Promethei vinculorum interpretatione fatali, primumque saxi eius fragmentum inclusum ferro ac digito circumdatum: hoc fuisse
3 anulum et hoc gemmam. II. His initiis coepit auctoritas in tantum amorem elata ut Polycrati Samio, insularum ac litorum tyranno, felicitatis suae,

[1] nulla BFa: nulla sui dh *edd. vett.*

[a] In XXXIII. 8, Pliny criticizes this interpretation and says that the ancients regarded the iron ring as a fetter and not as an ornamental ring.

[b] The maker and wearer of the ring was, of course, Prometheus.

I. In order that the work that I have undertaken may be complete, it remains for me to discuss gemstones. Here Nature's grandeur is gathered together within the narrowest limits; and in no domain of hers evokes more wonder in the minds of many who set such store by the variety, the colours, the texture and the elegance of gems that they think it a crime to tamper with certain kinds by engraving them as signets, although this is the prime reason for their use; while some they consider to be beyond price and to defy evaluation in terms of human wealth. Hence very many people find that a single gemstone alone is enough to provide them with a supreme and perfect aesthetic experience of the wonders of Nature.

The origin of the use of gemstones and the beginning of our present enthusiasm for them, which has blazed into so violent a passion, I have already discussed to some extent in my references to gold and XXXIII. 8.
to rings. According to the myths, which offer a pernicious misinterpretation of Prometheus' fetters,[a] the wearing of rings originated on the crags of the Caucasus. It was of this rock that a fragment was for the first time enclosed in an iron bezel and placed on a finger;[b] and this, we are told, was the first ring, and this the first gemstone.

II. Hence arose the esteem in which gemstones are held; and this soared into such a passion that to Polycrates of Samos, the overlord of islands and coasts, c. 540 B.C.

quam nimiam fatebatur etiam ipse qui felix erat,
satis piamenti in unius gemmae voluntario damno
videretur, si cum Fortunae volubilitate paria fecisset,
planeque ab invidia eius abunde se redimi putaret,
si hoc unum doluisset, adsiduo gaudio lassus. ergo
4 provectus [1] navigio in altum anulum mersit. at
illum piscis, eximia magnitudine regi natus, escae
vice raptum, ut faceret ostentum, in culina domino
rursus Fortunae insidiantis manu reddidit. sardo-
nychem eam gemmam fuisse constat, ostenduntque
Romae, si credimus, in Concordiae delubro cornu
aureo Augustae [2] dono inclusam et novissimum prope
5 locum praelatis multis optinentem. III. Post hunc
anulum regis alterius in fama est gemma, Pyrrhi
illius, qui adversus Romanos bellum gessit. namque
habuisse dicitur achaten in qua novem Musae et
Apollo citharam tenens spectarentur, non arte, sed
naturae sponte ita discurrentibus maculis ut Musis
6 quoque singulis sua redderentur insignia. nec
deinde alia, quae tradatur magnopere, gemmarum
claritas exstat apud auctores, praeterquam Ismenian
choraulen multis fulgentibusque uti solitum, comi-
tante fabula vanitatem eius: indicato in Cypro sex

[1] adsiduo gaudio lassus. ergo provectus BFd *Mayhoff* (*qui sic dist.*): adsiduo ergo gaudio lassus, provectus *Hermolaus Barbarus*, *Sillig*.

[2] Augustae B: Augusti dh.

[a] Presumably Livia, the wife of Augustus.

[b] A famous Theban pipe-player.

the voluntary sacrifice of a single gemstone seemed a sufficient atonement for his prosperity, which even he himself, the happy recipient, owned to be excessive. Thereby he hoped to settle his account with the fickleness of Fortune. Clearly he supposed that he would be fully indemnified against her ill-will if he, who was weary of unremitting happiness, suffered this one unhappy experience. Accordingly, he put out in a boat and threw the ring into deep water. The ring, however, was seized as bait by a huge fish, fit for a king, which restored the ring as an evil omen to its owner in his own kitchen, thanks to Fortune's treacherous intervention. The gem, it is agreed, was a sardonyx and is displayed in Rome (if we can believe that this is the original stone) in the temple of Concord, set in a golden horn. It was presented by the empress[a] and is ranked almost last in a collection containing many gems that are valued more highly.

III. After this ring, the most renowned gemstone
is that of another king, the famous Pyrrhus who 319–272 B.C.
fought a war against Rome. He is said to have 280–275 B.C.
possessed an agate on which could be seen the Nine Muses with Apollo holding his lyre. This was due not to any artistic intention, but to nature unaided; and the markings spread in such a way that even the individual Muses had their appropriate emblems allotted to them. Apart from these stones, my authorities can produce no gems famous enough to be specially recorded. They merely state that Ismenias[b] the pipe-player was in the habit of wearing a large number of brilliant stones and that there is a story associated with his vanity. In Cyprus a

aureis smaragdo, ubi erat scalpta Amymone, iussisse numerari et, cum duo relati essent,[1] male, Hercules, factum dixisse, multum enim detractum gemmae
7 dignitati. hic videtur instituisse ut omnes musicae artes [2] hac quoque ostentatione censerentur, veluti Dionysodorus, aequalis eius et aemulus, ut sic quoque par [3] videretur qui tertius eodem tempore inter musicos fuit: Nicomachus enim multas tantum habuisse gemmas traditur, sed nulla peritia electas.

8 Set [4] forte quadam his exemplis initio voluminis oblatis adversus istos qui sibi hac ostentatione adrogant ut palam sit eos tibicinum gloria tumere: IV. Polycratis gemma, quae demonstratur, intacta inlibataque est; Ismeniae aetate multos post annos apparet scalpi etiam smaragdos solitos. confirmat hanc eandem opinionem edictum Alexandri Magni, quo vetuit in hac gemma ab alio se scalpi quam ab Pyrgotele, non dubie clarissimo artis eius. post eum Apollonides et Cronius in gloria fuere quique divi Augusti imaginem simillime expressit, qua postea

[1] essent B: essent imminuto pretio dh *edd. vett.*
[2] artes B: artis *ceteri codd., Mayhoff.*
[3] par *codd.*: non par *Mayhoff.*
[4] set B: et *Mayhoff*: sed dh *edd. vett.*

[a] Here and elsewhere *smaragdus* is left untranslated because the term only occasionally refers to emeralds and is applied to a wide variety of green stones. In this instance the *smaragdus* was probably green quartz.

[b] One of the Danaids.

[c] We must suppose that Nicomachus, of whom nothing is known, was, as regards his musical skill, the second of this trio. There is no need to read *non par* with Mayhoff.

'smaragdus'[a] with the figure of Amymone[b] engraved upon it was offered for sale at a price of six gold pieces. Ismenias ordered the sum to be paid and, when two of the pieces were returned to him, he exclaimed, 'Heavens! I've been done. The stone has been robbed of much of its value.' It is Ismenias who appears to have brought in the fashion whereby all musical accomplishments came to be assessed partly in terms of this kind of lavish display. This was the case with his contemporary and rival Dionysodorus. Consequently, Ismenias seemed to be equalled through this very circumstance by a man who was only third among the musicians of the time. As for Nicomachus, he is said to have possessed merely large numbers of stones chosen without any discrimination.[c]

But it is more or less accidentally that in prefacing the present volume I have quoted these instances as a criticism of those despicable people who in making such a display of their gems claim the right to show the world that their vanity and conceit is that of a piper. IV. And now to resume: the gemstone displayed as that of Polycrates is in its natural state, unmarked by engravings. In the time of Ismenias, many years later, it seems evident that it had become customary to engrave even 'smaragdi.' This impression is supported, moreover, by an edict of Alexander the Great forbidding his likeness to be engraved on this stone by anyone except Pyrgoteles, who was undoubtedly the most brilliant artist in this field. Next to him in fame have been Apollonides, Cronius and the man who made the excellent likeness of Augustus of Revered Memory which his successors

9 principes signant, Dioscurides. Sulla dictator tradi-
tione Iugurthae semper signavit. est apud auctores
et Intercatiensem[1] illum, cuius patrem Scipio
Aemilianus ex provocatione interfecerat, pugnae
effigie eius signasse, volgato Stilonis Praeconini sale,
quidnam fuisse facturum, si Scipio a patre eius
10 interemptus fuisset. divus Augustus inter initia
sphinge signavit. duas in matris anulis eas in-
discretae similitudinis invenerat. altera per bella
civilia absente ipso signavere amici epistulas et
edicta quae ratio temporum nomine eius reddi
postulabat, non inficeto lepore accipientium, aenig-
mata adferre eam sphingem. quippe etiam Maece-
natis rana per collationes pecuniarum in magno
terrore erat. Augustus postea ad devitanda convicia
sphingis Alexandri Magni imagine signavit.

11 V. Gemmas plures primus omnium Romae habuit
—quod peregrino appellant nomine dactyliothecam[2]
—privignus Sullae Scaurus, diuque nulla alia fuit,
donec Pompeius Magnus eam quae Mithridatis regis
fuerat inter dona in Capitolio dicaret, ut Varro

[1] Intercatiensem dh(?) *Hermolaus Barbarus coll. III. 26*: Catiensem B.

[2] quod . . . dactyliothecam *sic collocant* B *Mayhoff*: *ante* primus *ceteri codd. et edd.*

have used as their seal, namely Dioscurides. Sulla as dictator always used a signet representing the surrender of Jugurtha. We learn from our authorities also that the native of Intercatia, whose father had been slain by Scipio Aemilianus[a] after challenging him to single combat, used a signet representing this fight. Hence the familiar witticism made by Stilo Praeconinus, who remarked, 'What would he XXXIII. 29 have done if Scipio had been killed by his father?' Augustus of Revered Memory at the beginning of his career used a signet engraved with a sphinx, having found among his mother's rings two such signets which were so alike as to be indistinguishable. During the Civil Wars, one of these was used by his personal advisers, whenever he himself was absent, for signing any letters and proclamations which the circumstances required to be despatched in his name. The recipients used to make a neat joke saying 'the Sphinx brings its problems.' Of course, the frog signet belonging to Maecenas was also greatly feared because of the contributions of money that it demanded. In later years Augustus, wishing to avoid insulting comments about the sphinx, signed his documents with a likeness of Alexander the Great.

V. The first Roman to own a collection of gemstones (for which we normally use the foreign term 'dactyliotheca,' or 'ring cabinet') was Sulla's stepson Scaurus. For many years there was no other XXXVI. 113, 116. until Pompey the Great dedicated in the Capitol among his other offerings a ring cabinet that had belonged to King Mithridates. This, as Varro and

[a] In 151 B.C., while he was serving as a military tribune in Spain.

aliique aetatis eius auctores confirmant, multum praelata [1] Scauri. hoc exemplo Caesar dictator sex dactyliothecas in aede Veneris Genetricis consecravit, Marcellus Octavia genitus unam in aede Palatini Apollinis.

12 VI. Victoria tamen illa Pompei primum ad margaritas gemmasque mores inclinavit, sicut L. Scipionis et Cn. Manli ad caelatum argentum et vestes Attalicas et triclinia aerata, sicut L. Mummi ad Corinthia et tabulas pictas. id uti planius noscatur, verba ex
13 ipsis [2] Pompei triumphorum actis subiciam. ergo tertio triumpho, quem de piratis, Asia, Ponto gentibusque et regibus in VII volumine operis huius indicatis M. Pisone M. Messala cos. pr. k. Octobres natali suo egit, transtulit alveum cum tesseris lusorium e gemmis duabus latum pedes tres, longum pedes quattuor—ne quis effetas res dubitet nulla gemmarum magnitudine hodie prope ad hanc amplitudinem accedente, in eo fuit luna aurea pondo
14 xxx—lectos tricliniares ⟨aureos⟩ [3] tres, vasa ex auro

[1] praelata BF *Detlefsen, Mayhoff*: praelatam L²dh *edd. vett., Sillig.*
[2] ipsis dh: ipsius B *Sillig, Ianus.*
[3] aureos *post* tricliniares *suppl. ego.*

[a] Bostock and Riley (presumably reading *praelatum*) translate 'was greatly superior to that of Scaurus.' But the construction of *praelatam Scauri* is forced. Moreover, the sentiment conflicts with XXXVI. 113-16, from which it is clear that Pliny's authorities stressed in every way Scaurus' exceptional resources. B's *praelata,* taken as ablative absolute, gives the required sense.

other authorities of the period confirm, was far inferior to that of Scaurus.[a] Pompey's example was followed by Julius Caesar, who during his dictatorship consecrated six cabinets of gems in the temple of Venus Genetrix, and by Marcellus, Octavia's son, who dedicated one in the temple of Apollo on the Palatine.

VI. However, it was this victory of Pompey over Mithridates that made fashion veer to pearls and
gemstones. The victories of Lucius Scipio and of 189 B.C.
Cnaeus Manlius had done the same for chased silver, 189 B.C.
garments of cloth of gold [b] and dining couches in-
laid with bronze; and that of Mummius for Corin- 146 B.C.
thian bronzes and fine paintings. To make my point clearer, I shall append statements taken directly from official records of Pompey's triumphs. Thus, Pompey's third triumph was held on his own birthday, September 29th [c] of the year in which Marcus Piso
and Marcus Messala were consuls, to celebrate his 61 B.C.
conquest of the pirates, Asia, Pontus and all the
peoples and kings mentioned in the seventh volume VII. 98.
of this work. In this triumph, then, there was carried in the procession a gaming-board complete with a set of pieces, the board being made of two precious minerals and measuring three feet broad and four feet long. And in case anyone should doubt that our natural resources have become exhausted seeing that to-day no gems even approach such a size, there rested on this board a golden moon weighing 30 pounds. There were also displayed three gold dining couches; enough gold vessels

[b] See XXXVI. 115 and p. 88, n. [b].
[c] Before the Julian reform there were 29 days in September.

et gemmis abacorum novem, signa aurea tria Minervae, Martis, Apollinis, coronas ex margaritis XXXIII, montem aureum quadratum cum cervis et leonibus et pomis omnis generis circumdata vite aurea, musaeum ex margaritis, in cuius fastigio horologium. erat et imago Cn. Pompei e margaritis, illa[1] relicino[2] honore grata, illius probi oris venerandique per cunctas gentes, illa, inquam,[3] ex margaritis, illa,[4] severitate victa et veriore[5] luxuriae[6] triumpho!
15 numquam profecto inter illos viros durasset cognomen Magni, si prima victoria sic triumphasset! e margaritis, Magne, tam prodiga re et feminis reperta, quas gerere te fas non sit, fieri tuos voltus? sic te pretiosum videri? non ergo illa tua similior est
16 imago quam Pyrenaei iugis inposuisti? grave profecto, foedum probrum erat, ni verius saevum irae deorum ostentum id credi oporteret clareque intellegi posset iam tum[7] illud caput orientis opibus sine reliquo corpore ostentatum. cetera triumphi eius quam virilia! HS |MM|[8] r. p. data, legatis et

[1] illa BL: illo *Mayhoff*.
[2] relicino B: reciduo h: regio L *edd. vett.*
[3] illa, inquam L *edd. vett.*: illa BFh *Detlefsen*: ficta *Mayhoff*.
[4] illa, B (*dist. ego*): *om. ceteri codd., edd. vett.*: ita *Mayhoff*.
[5] veriore FLh: verius B² *Sillig*.
[6] luxuriae *Gelen*; luxuria et B: luxuria *aut* luxuria quam *ceteri codd.*
[7] iam tum h *cod. Poll.*: iam tunc d: tantum B *Sillig, Ianus*.
[8] |MM| *Ianus*: MM *Sillig*: MM *cod.* B: *om.* Fdh.

---

[a] Or possibly 'fruit tree': *cf.* XVIII. 240.
[b] For *relicino*, *cf.* Apuleius, *Florida*, I. VII. 26 (Hildebrand),

inlaid with gems to fill nine display stands; three gold figures of Minerva, Mars and Apollo respectively; thirty-three pearl crowns; a square mountain of gold with deer, lions and every variety of fruit[a] on it and a golden vine entwined around it; and a grotto of pearls, on the top of which there was a sundial. Furthermore, there was Pompey's portrait rendered in pearls, that portrait so pleasing with the handsome growth of hair swept back[b] from the forehead, the portrait of that noble head revered throughout the world—that portrait, I say, that portrait was rendered in pearls. Here it was austerity that was defeated and extravagance that more truly celebrated its triumph. Never, I think, would his surname 'the Great' have survived among the stalwarts
of that age had he celebrated his first triumph in c. 78 B.C.
this fashion! To think that it is of pearls, Great Pompey, those wasteful things meant only for women, of pearls, which you yourself cannot and must not wear, that your portrait is made! To think that
this is how you make yourself seem valuable! Is not VII. 96.
then the trophy that you placed upon the summit of the Pyrenees a better likeness of yourself? This, to be sure, would have been a gross and foul disgrace were it not rather to be deemed a cruel omen of Heaven's wrath. That head, so ominously manifested without its body in oriental splendour, bore a meaning which even then could not be mistaken.[c] But as for the rest of that triumph, how worthy it was of a good man and true! 200,000,000 sesterces

gratia relicinae frontis, which H. E. Butler translates: 'fair forehead with back-streaming hair.'
[c] A reference to his murder in Egypt in 48 B.C.

quaestoribus qui oras maris defendissent HS |M|,[1]
17 militibus singulis HS sena milia. tolerabiliorem
tamen causam fecit C. principis, qui super cetera
muliebria soccos induebat e margaritis, aut Neronis
principis, qui sceptra et[2] personas[3] et cubilia
viatoria[4] unionibus construebat. quin immo etiam
ius videmur perdidisse corripiendi gemmata potoria
et varia[5] supellectilis genera, anulos translucentes.
quae enim non luxuria innocentior existimari possit?
18 VII. Eadem victoria primum in urbem myrrhina[6]
invexit, primusque Pompeius capides et pocula ex eo
triumpho Capitolino Iovi dicavit. quae protinus ad
hominum usum transiere, abacis etiam escariisque
vasis expetitis; et crescit in dies eius[7] luxuria.
myrrhino $\overline{LXX}$ HS empto, capaci plane ad sextarios
tres calice, potavit . . . anus[8] consularis, ob amorem
adroso[9] margine eius, ut tamen iniuria illa pretium
augeret; neque est hodie myrrhini alterius prae-
19 stantior indicatura. idem in reliquis generis eius
quantum voraverit, licet aestimare ex multitudine,

[1] |M| *Ianus*: M *Sillig*: M *cod.* B.
[2] sceptra et *Gelen*: sceptram F: sceptra *ceteri codd.*, *Sillig.*
[3] personas *Gelen*: per B: personis L *Sillig*: personis histrionum dh *edd. vett.*
[4] viatoria FLh: amatoria cod. d *Sillig.*
[5] varia dh: in varia B: inaurata *vel* murrina *coni. Mayhoff.*
[6] myrrhina B (*item infra passim*): murrhina dh: murrina *Sillig.*
[7] eius B: eius rei *ceteri codd.*: ea *coni. Mayhoff.*
[8] . . . anus *Urlichs*: annos B: ante hos annos dh *edd. vett.*: Annius *Ianus ex coni. Sillig*: Vipstanus *coni. Mayhoff.*
[9] adroso (adrosso B) B *Sillig, Mayhoff*: abroso L^1dh.

[a] Possibly 'trays.'
[b] The text is corrupt, and the name is lost.
[c] *Voraverit* is probably a pun. The meaning could be 'the amount he ate,' a reference to his habit of gnawing his favourite cup.

were given to the State, 100,000,000 to the commanders and quaestors who had guarded the coasts and 6000 to each soldier. However, he merely made it easier for us to excuse the conduct of the Emperor Gaius when, apart from other effeminate articles of clothing, he wore slippers sewn with pearls, or that of the Emperor Nero, when he had sceptres, actors' masks and travelling couches adorned with pearls. Why, we seem to have lost even the right to criticize cups and other pieces of household equipment inlaid with gems or, again, XXXIII. 23. rings with stones set in open bezels. For compared with Pompey's, there is no extravagance that can be considered to have been so harmful.

VII. It was the same victory that brought myrrhine *Myrrhine ware.* ware for the first time to Rome. Pompey was the first to dedicate myrrhine bowls and cups, which he set aside from the spoils of his triumphs for Jupiter of the Capitol. Such vessels immediately passed into ordinary use, and there was a demand even for display stands[a] and tableware. Lavish expenditure on this fashion is increasing every day. . . .[b], an ex-consul, drank from a myrrhine cup for which he had given 70,000 sesterces, although it held just three pints. He was so fond of it that he would gnaw its rim; and yet the damage he thus caused only enhanced its value, and there is no other piece of myrrhine ware even to-day that has a higher price set upon it. The amount of money squandered[c] by this same man upon the other articles of this material in his possession can be gauged from their number, which was so

quae tanta fuit ut auferente liberis eius Nerone exposita occuparent theatrum peculiare trans Tiberim in hortis, quod a populo impleri canente se, dum Pompeiano proludit, etiam Neroni satis erat. vidi tunc adnumerari unius scyphi fracti membra, quae in dolorem, credo, saeculi invidiamque Fortunae tamquam Alexandri Magni corpus in conditorio
20 servari, ut ostentarentur, placebat. T. Petronius consularis moriturus invidia Neronis, ut mensam eius exheredaret, trullam myrrhinam HS $\overline{\text{CCC}}$ [1] emptam fregit; sed Nero, ut par erat principem, vicit omnes HS $\overline{|\text{X}|}$ [2] capidem unam parando. memoranda res tanti imperatorem patremque patriae bibisse!

21 VIII. Oriens myrrhina mittit. inveniuntur ibi pluribus locis nec insignibus, maxime Parthici regni, praecipua tamen in Carmania. umorem sub terra putant calore densari. amplitudine numquam parvos excedunt abacos, crassitudine raro quanta dicta sunt

[1] $\overline{\text{CCC}}$ Sillig: CCC *codd.*
[2] $\overline{|\text{X}|}$ *Ianus*: IXI *cod.* B: $\overline{\text{X}}$ *Sillig.*

[a] Pliny's description in §§ 21–22 suits fluor-spar. See *Journal of Roman Studies*, XXXIX (1949), 31–37, and *Antiquity*, XXVI (1952), 65–70. But it does not necessarily follow, as the authors of these articles seem to suppose, that all *murrina* were fluor-spar. In *Periplus Maris Erythraei* 49 we read of ὀνυχίνη λιθεία καὶ μουρρίνη. In this context the latter should mean agate, which, like fluor-spar, was used for cups. Some agate was burnt, as is the case to-day, so as to modify its colours. Propertius, in his much-debated line (IV. 5, 26) *murreaque in Parthis pocula cocta focis*, was probably confusing fluor-spar from Persia with burnt agate from India.

[b] Carmania (mod. Kirman) was a part of the Parthian kingdom, although Pliny seems to distinguish it from Parthia. Fluor-spar is still found in this region.

great that, when Nero took them away from the man's children and displayed them, they filled the private theatre in his gardens across the Tiber, a theatre which was large enough to satisfy even Nero's desire to sing before a full house at the time when he was rehearsing for his appearance in Pompey's theatre. XXXVI. 4 It was at this time that I saw the pieces of a single broken cup included in the exhibition. It was decided that these, like the body of Alexander, should be preserved in a kind of catafalque for display, presumably as a sign of the sorrows of the age and the ill-will of Fortune. When the ex-consul Titus Petronius was facing death, he broke, Tac. *Ann.* XVI. 19. to spite Nero, a myrrhine dipper that had cost him 300,000 sesterces, thereby depriving the Emperor's dining-room table of this legacy. Nero, however, as was proper for an emperor, outdid everyone by paying 1,000,000 sesterces for a single bowl. That one who was acclaimed as a victorious general and as Father of his Country should have paid so much in order to drink is a detail that we must formally record.

VIII. Myrrhine vessels come to us from the East.[a] There the substance is found in several otherwise unremarkable localities, particularly within the kingdom of Parthia. It is in Carmania, however, that the finest specimens exist.[b] The substance is thought to be a liquid which is solidified underground by heat.[c] In size the pieces are never larger than a small display stand, while in bulk they rarely equal the drinking vessels that we have discussed. They

[c] Here *calor* means a dry, potentially fiery exhalation. See Introduction, pp. x, xii.

potoria. splendor est iis sine viribus nitorque verius quam splendor. sed in pretio varietas colorum subinde circumagentibus se maculis in purpuram candoremque et tertium ex utroque, ignescente veluti per transitum coloris purpura aut rubescente
22 lacteo. sunt qui maxime in iis laudent extremitates et quosdam colorum repercussus, quales in caelesti arcu spectantur imi.[1] aliis maculae pingues placent —tralucere quicquam aut pallere vitium est—itemque sales verrucaeque non eminentes, sed, ut in corpore etiam, plerumque sessiles. aliqua et in odore commendatio est.

23 IX. Contraria huic causa crystallum facit, gelu vehementiore concretum.[2] non aliubi certe reperitur quam ubi maxime hibernae nives rigent, glaciemque esse certum est, unde nomen Graeci dedere. oriens et hanc mittit, quoniam Indicae nulla praefertur. nascitur et in Asia, vilissima circa Alabanda et Orthosiam finitimisque,[3] item in Cypro, sed laudata
24 in Europa Alpium iugis. Iuba auctor est et in quadam insula Rubri maris ante Arabiam sita nasci, quae Necron vocetur, et in ea quae iuxta gemmam topazum ferat, cubitalemque effossam a Pythagora

[1] spectantur imi. aliis BF *Ianus* (*qui sic dist.*): spectantur. iam aliis *Mayhoff, fortasse recte*: imi *om.* Ldh *edd. vett.*
[2] concretum *ego*: concreto *codd.*; *fortasse* gelu vehementiore ⟨umore⟩ concreto: *cf.* § 21, 26.
[3] finitimisque B: finitimisque montibus *cod.* h, *cod. Poll.*

---

[a] This smell was probably due to hot resin in which the fluor-spar was soaked to prevent it disintegrating when it was worked.
[b] *I.e.*, cold instead of heat: *cf.* p. 179, n. [c], and Introduction, pp. xiii–xiv.

shine, but without intensity; indeed, it would be truer to say that they glisten rather than shine. Their value lies in their varied colours: the veins, as they revolve, repeatedly vary from purple to white or a mixture of the two, the purple becoming fiery or the milk-white becoming red as though the new colour were passing through the vein. Some people particularly appreciate the edges of a piece, where colours may be reflected such as we observe in the inner part of a rainbow. Others prefer thick veins (any trace of transparency or fading is always a fault) and also specks and spots. These spots do not protrude, but are usually flattened, like warts on the body. The smell of the substance is also a merit.[a]

IX. A cause contrary to the one mentioned is ***Rock-crystal.***
responsible for creating rock-crystal,[b] for this is hardened by excessively intense freezing. At any rate, it is found only in places where the winter snows freeze most thoroughly; and that it is a kind of ice is certain: the Greeks have named it accordingly.[c] Rock-crystal also[d] comes to us from the East, for that of India is preferred to any other. It is found also in Asia Minor, where a very poor variety occurs around Alabanda and Orthosia and in the neighbouring districts, and likewise in Cyprus: in Europe excellent rock-crystal occurs in the ranges of the Alps. Juba assures us that it is to be found also XXXVI. 163.
on an island called Necron, or Island of the Dead,[e] in the Red Sea facing Arabia, as well as on the neighbouring one which produces peridot: here, according § 108.
to him, a piece measuring a cubit in length was dug

[c] κρύσταλλος means both 'rock-crystal' and 'ice.'
[d] Like myrrhine (§ 21).
[e] *I.e.* νεκρῶν νῆσος.

Ptolemaei praefecto; Cornelius Bocchus et in Lusitania perquam mirandi ponderis in Ammaeensibus iugis, depressis ad libramentum aquae puteis.

25 hoc mirum quod Xenocrates Ephesius tradit, aratro in Asia et Cypro excitari; non enim reperiri in terreno nec nisi inter cautes creditum fuerat. similius veri est, quod idem Xenocrates tradit, et[1] torrentibus saepe deportari. Sudines negat nisi ad meridiem spectantibus locis nasci. quod certum est, non reperitur in aquosis, quamquam in regione praegelida, vel si ad vada usque glacientur amnes.

26 e caelesti umore puraque nive id fieri necesse est; ideo caloris inpatiens nisi in frigido potu abdicatur. quare nascatur sexangulis lateribus, non facile ratio iniri potest, eo magis quod neque in mucronibus eadem species est et ita absolutus laterum levor est ut nulla id arte possit aequari.

27 X. Magnitudo amplissima adhuc visa nobis erat quam in Capitolio Livia Augusti[2] dicaverat, librarum circiter CL. Xenocrates idem auctor est vas amphorale visum, et aliqui ex India sextariorum quattuor. nos liquido adfirmare possumus in cautibus Alpium

[1] et *Mayhoff*: e *cod.* B: a *cod.* a: *om. ceteri codd.*
[2] Augusti F: Augusta BL.

[a] Probably not the recent authority mentioned in § 37 and elsewhere, but an earlier writer.
[b] For *amphorale*, see XXXVI. 59 and p. 47, n. [f], on *cadus*. The Roman 'amphora' measured 6 gallons 7 pints.

up by Ptolemy's officer Pythagoras. Cornelius Bocchus mentions, furthermore, that rock-crystal of quite exceptional weight was found in Portugal, in the Ammaeensian mountains, when wells were being sunk to water-level. The surprising remark is made by Xenocrates of Ephesus[a] that in Asia Minor and Cyprus rock-crystal is turned up by the plough, for previously it was not thought to occur in soil, but only amidst rocks. A more plausible statement made by the same Xenocrates is that it is also often carried down by torrents. Sudines maintains that XXXVI. 59.
it occurs only in places that face south. What is certain is that it is not found in well-watered localities, however cold the district may be, even if it is one where the rivers freeze down to the bed. The inevitable conclusion is that rock-crystal is formed of moisture from the sky falling as pure snow. For this reason, it cannot stand heat and is rejected except as a receptacle for cold drinks. Why it is formed with hexagonal faces cannot be readily explained; and any explanation is complicated by the fact that, on the one hand, its terminal points are not symmetrical and that, on the other, its faces are so perfectly smooth that no craftsmanship could achieve the same effect.

X. The largest mass of rock-crystal ever seen by us is that which was dedicated in the Capitol by Livia, the wife of Augustus: this weighs about 150 pounds. Xenocrates, just mentioned, records that § 25.
he saw a vessel that could hold six gallons,[b] and some authors mention one from India with a capacity of 4 pints. What I myself can unequivocally affirm is that among the rocks of the Alps it generally forms

nasci adeo inviis plerumque ut fune pendentes eam extrahant. peritis signa et indicia nota sunt.
28 infestantur plurimis vitiis, scabro ferumine,[1] maculosa nube, occulta aliquando vomica, praeduro fragilique centro, item sale appellato. est et rufa aliquis[2] robigo, aliis capillamentum rimae simile. hoc artifices caelatura occultant. quae vero sine vitio sint, pura esse malunt, acenteta appellantes, nec spumei coloris, sed limpidae aquae. postrema auctoritas in pondere est. invenio apud medicos, quae sint urenda corporum, non aliter utilius uri putari quam crystallina pila adversis opposita solis
29 radiis. alius et in his furor, HS centum quinquaginta milibus trullam unam non ante multos annos mercata matre familias nec divite. Nero amissarum rerum nuntio accepto duos calices crystallinos in suprema ira fregit inlisos. haec fuit ultio[3] saeculum suum punientis, ne quis alius iis biberet. fragmenta sarciri nullo modo queunt. mire his ad similitudinem accessere vitrea, sed prodigii modo, ut suum pretium auxerint, crystalli non deminuerint.

[1] ferumine B: ferrumine dh: ferrugine *cod.* a, *cod. Poll.*
[2] aliquis *Mayhoff*: alicui B: aliquid Fa: aliquibus L.
[3] ultio *Sillig* (*e coni. Iani*): uitio BF: ratio dh.

---

[a] Possibly 'signs that indicate flaws,' referring to what follows. But for *periti* used of prospectors, *cf.* Theophrastus *de Lap.* 28, οἱ ἔμπειροι.

in such inaccessible places that it has to be removed by men suspended from ropes. Experts are familiar with the signs that indicate its presence.[a] Pieces of rock-crystal are impaired by numerous defects, for example by rough, solder-like excrescences, cloudy spots, occlusions of moisture that are sometimes hidden within it, or hard yet brittle cores, and also what are known as 'salt-specks.' Some specimens display a bright red rust, and others fibres that look like flaws. These can be concealed by the engraver. Pieces, however, that have no defects are preferably left unengraved: these are known to the Greeks as 'acenteta,' or 'lacking a core,' and their colour is that of clear water, not of foam. Finally, the weight of a piece is a part of its value. I find that among doctors there is considered to be no more effective method of cauterizing parts that need such treatment than by means of a crystal ball so placed as to intercept the sun's rays. Rock-crystal provides yet another instance of a crazy addiction, for not many years ago a respectable married woman, who was by no means rich, paid 150,000 sesterces for a single dipper. Nero, on receiving a message that all was lost, A.D. 68. broke two crystal cups in a final outburst of rage by dashing them to the ground. This was the vengeance of one who wished to punish his whole generation, to make it impossible for any other man to drink from these cups. Once it has been broken, rock-crystal cannot be mended by any method whatsoever. Glass-ware has now come to resemble rock-crystal in a remarkable manner, but the effect has been to flout the laws of Nature and actually to increase the value of the former without diminishing that of the latter.

30 XI. Proximum locum in deliciis, feminarum tamen adhuc tantum, sucina optinent, eandemque omnia haec quam gemmae auctoritatem; sane priora illa aliquis de causis, crystallina frigido potu, myrrhina utroque; in sucinis causam ne deliciae quidem adhuc excogitare potuerunt.

31 Occasio est vanitatis Graecorum detegendae: legentes modo aequo perpetiantur animo,[1] cum hoc quoque intersit vitae scire, non[2] quidquid illi prodidere mirandum. Phaëthontis fulmine icti sorores luctu mutatas in arbores populos lacrimis electrum omnibus annis fundere iuxta Eridanum amnem, quem Padum vocavimus, electrum appellatum, quoniam sol vocitatus sit Elector, plurimi poëtae dixere primique, ut arbitror, Aeschylus, Philoxenus, Euripides, Nicander, Satyrus. quod esse falsum
32 Italiae testimonio patet. diligentiores eorum Electridas insulas in mari Hadriatico esse dixerunt, ad quas delaberetur Pado. qua appellatione nullas umquam ibi fuisse certum est, nec vero ullas ita positas esse in quas quidquam cursu Padi devehi posset. nam quod Aeschylus in Hiberia, hoc est in Hispania,[3] Eridanum esse dixit eundemque appellari

[1] animo *Sillig* (*e coni. Iani*): ablimo B: nemo *cod.* a, *cod. Poll.*
[2] non BL: nos *Sillig e coni. Iani.*
[3] hoc est in Hispania *in uncis ponit Mayhoff.*

[a] Strangely enough, the brightly coloured Sicilian amber (simetite) does not seem to have been known before the 17th century.

XI. The next place among luxuries, although as yet it is fancied only by women, is held by amber. All the three substances now under discussion enjoy the same prestige as precious stones; but whereas there are proper reasons for this in the case of the two former substances, since rock-crystal vessels are used for cold drinks and myrrhine-ware for drinks both hot and cold, not even luxury has yet succeeded in inventing a justification for using amber. *Amber.*

Here is an opportunity for exposing the falsehoods of the Greeks. I only ask my readers to endure these with patience since it is important for mankind just to know that not all that the Greeks have recounted deserves to be admired. The story how, when Phaethon was struck by the thunderbolt, his sisters through their grief were transformed into poplar trees, and how every year by the banks of the River Eridanus, which we call the Po, they shed tears of amber, known to the Greeks as 'electrum,' since they call the sun 'Elector' or 'the Shining One'—this story has been told by numerous poets, the first of whom, I believe, were Aeschylus, Philoxenus, Euripides, Nicander and Satyrus. Italy provides clear evidence that this story is false.[a] More conscientious Greek writers have mentioned islands in the Adriatic named the Electrides, to which, they say, amber is carried along by the Po. It is quite certain, however, that no islands of this name ever existed there, and indeed that there are no islands so situated as to be within reach of anything carried downstream by the Po. Incidentally, Aeschylus says that the Eridanus is in Iberia—that is, in Spain—and that it is also called the Rhône, while Euripides

Rhodanum, Euripides rursus et Apollonius in Hadriatico litore confluere Rhodanum et Padum, faciliorem veniam facit ignorati sucini tanta igno-
33 rantia orbis. modestiores, sed aeque falsum, prodidere in extremis Hadriatici sinus inviis rupibus arbores stare quae canis ortu hanc effunderent cummim. Theophrastus effodi in Liguria dixit, Chares vero Phaëthontem in Aethiopia Ἄμμωνος νήσῳ obisse, ibi et delubrum eius esse atque oraculum electrumque gigni. Philemon fossile esse et in Scythia erui duobus locis, candidum atque cerei coloris quod vocaretur electrum, in alio fulvum quod
34 appellaretur sualiternicum.[1] Demostratus lyncurium vocat et fieri ex urina lyncum bestiarum, e maribus fulvum et igneum, e feminis languidius atque candidum; alios id dicere langurium et esse in Italia bestias languros. Zenothemis langas vocat easdem et circa Padum iis vitam adsignat, Sudines arborem,
35 quae gignat in Liguria, vocari lynca. in eadem sententia et Metrodorus fuit. Sotacus credidit in

[1] sualiternicum B: sualternicum *aut* subalternicum *ceteri codd.*: hyalopyrrichum *Detlefsen*. *An* hyalelectricum?

[a] No amber has been found in Liguria, but some fossil resin occurs N.E. of the Apennines.

[b] Most succinite (see p. 194, n. [c]) is transparent to translucent, and in colour yellow, red or brown, but some is opaque and of a pale straw colour because innumerable minute bubbles are present.

and Apollonius, for their part, assert that the Rhône and the Po meet on the coast of the Adriatic. But such statements only make it easier to pardon their ignorance of amber when their ignorance of geography is so great. More cautious but equally misguided writers have described how on inaccessible rocks at the head of the Adriatic there stand trees which at the rising of the Dog Star shed this gum. Theophrastus states that amber is dug up in Liguria,[a] *de Lap.* 29.
while Chares states that Phaethon died in Ethiopia on an island the Greek name of which is the Isle of Ammon, and that here is his shrine and oracle, and here the source of amber. Philemon declares that it is a mineral which is dug up in two regions of Scythia, in one of which it is of a white, waxy colour and is called 'electrum,' while in the other it is tawny and known as 'sualiternicum.'[b] Demonstratus[c] calls amber 'lyncurium,' or 'lynx-urine,' and § 52.
alleges that it is formed of the urine of the wild beasts known as lyxnes, the males producing the kind that is tawny and fiery in colour, and the females, that which is fainter and light in colour. According to him, others call it 'langurium' and state that the beasts, which live in Italy, are 'languri.' Zenothemis[d] calls the same beasts 'langes' and assigns them a habitat on the banks of the Po, while Sudines XXXVI. 59.
writes that a tree which produces amber in Liguria is called 'lynx.' Metrodorus[e] also holds the same opinion. Sotacus believes that it flows from crags XXXVI. 128.

[c] A historian and Roman senator of the early 1st century A.D.

[d] The writer of a poem called *Periplus*.

[e] A savant associated with Mithridates VI.

Brittannia petris effluere, quas electridas vocavit, Pytheas Guionibus,[1] Germaniae genti, accoli aestuarium oceani [2] Metuonidis [3] nomine spatio stadiorum sex milium; ab hoc diei navigatione abesse insulam Abalum; illo per ver fluctibus advehi et esse concreti maris purgamentum; incolas pro ligno ad ignem uti
36 eo proximisque Teutonis vendere. huic et Timaeus credidit, sed insulam Basiliam vocavit. Philemon negavit flammam ab electro reddi. Nicias solis radiorum sucum intellegi voluit [4] hoc; circa occasum vehementiores in terram actos pinguem sudorem in ea relinquere,[5] oceani deinde aestibus in Germanorum litora eici. in Aegypto nasci simili modo—vocari [6] sacal—item in India gratiusque et ipso [7] ture esse
37 Indis; in Syria quoque feminas verticillos inde facere et vocare [8] harpaga, quia folia paleasque et vestium fimbrias rapiat. Theochrestus oceano id exaestuante ad Pyrenaei promunturia adpelli,[9] quod et Xenocrates credidit, qui de his nuperrime scripsit vivitque adhuc.

[1] Guionibus B: Gutonibus (*Sillig*) *aut* Gotonibus *aut* Guttonibus *ceteri codd.*: Inguaeonibus *A. Riese.*
[2] oceani *Gelen*: ab oceani B: ab oceano Fh.
[3] Metuonidis Fh: Metuonidis . . . spatio *om.* B: Mentonomon *edd. vett.*
[4] voluit hoc BFh: voluit; hos LD *Sillig* (*qui sic dist.*).
[5] relinquere, oceani *dist. Mayhoff*: relinquere oceani, *dist. Sillig.*
[6] vocari B: et vocare *aliquot codd.*
[7] et ipso *Mayhoff*: et pro B: est pro F.
[8] vocare BFdh: vocari *cod.* a, *cod. Poll.*
[9] adpelli *Mayhoff*: depelli B: eici h *Sillig.*

[a] His voyage to Britain and the North is thought to have been made *c.* 310–306 B.C. He is describing the Baltic.

in Britain called the Electrides. Pytheas[a] speaks of an estuary of the Ocean named Metuonis and extending for 750 miles, the shores of which are inhabited by a German tribe, the Guiones. From here it is a day's sail to the Isle of Abalus,[b] to which, he states, amber is carried in spring by currents, being an excretion consisting of solidified brine. He adds that the inhabitants of the region use it as fuel instead of wood and sell it to the neighbouring Teutones. His belief is shared by Timaeus, who, *c.* 356–260 B.C. however, calls the island Basilia. Philemon denies the suggestion that amber gives off a flame. Nicias insists on explaining amber as moisture from the sun's rays, as follows: he maintains that as the sun sets in the west its rays fall more powerfully upon the earth and leave there a thick exudation, which is later cast ashore in Germany by the tides of the Ocean. He mentions that amber is formed similarly in Egypt, where it is called 'sacal,' as well as in India, where the inhabitants find it more agreeable even than frankincense;[c] and that in Syria the women make whorls of it and call it 'harpax,' or 'the snatcher,' because it picks up leaves, straws and the fringes of garments. Theochrestus holds that it is washed up on the capes of the Pyrenees by the Ocean in turmoil,[d] a view which is shared by Xenocrates, the most recent writer on the subject, who is still living.[e] Asarubas

[b] Apple Island, like Avalon?
[c] The 'amber' of Egypt and India was no doubt ambergris ejected by the sperm whales of the Indian Ocean.
[d] Or possibly 'when the tide is high.'
[e] Xenocrates of Aphrodisias, a physician. He may be the source of the information given in §§ 42–46.

Asarubas tradit iuxta Atlanticum mare esse lacum
Cephisida, quem Mauri vocent Electrum. hunc sole
excalfactum e limo reddere electrum fluitans.
38 Mnaseas Africae locum Sicyonem appellat et
Crathin amnem in oceanum effluentem e lacu, in quo
aves, quas meleagridas et penelopas vocat, vivere;
ibi nasci ratione eadem qua supra dictum est.
Theomenes Syrtim iuxta magnam hortum Hesperidon
esse et stagnum Electrum, ibi arbores populos,
quarum e cacuminibus in stagnum cadat; colligi
39 autem ab virginibus Hesperidum. Ctesias in Indis
flumen esse Hypobarum, quo vocabulo significetur
omnia bona eum ferre; fluere a septentrione in
exortivum oceanum iuxta montem silvestrem arbo-
ribus electrum ferentibus. arbores eas psittha-
choras [1] vocari, qua appellatione significetur prae-
dulcis suavitas. Mithridates in Carmaniae [2] litoribus
insulam esse, quam vocari Seritam, cedri genere
40 silvosam, inde defluere in petras. Xenocrates non
sucinum tantum in Italia, sed et thium [3] vocari, a
Scythis vero sacrium, quoniam et ibi nascatur; alios
putare in Numidia ex limo [4] gigni. super omnes est
Sophocles poeta tragicus, quod equidem miror, cum
tanta gravitas ei cothurni sit, praeterea vitae fama

[1] psittachoras *Detlefsen*: psitthachora B: siptachoras *Hardouin e Ctesia, Sillig.*

[2] Carmaniae *Detlefsen*: Germaniae *codd.*

[3] et thium *Detlefsen*: etium *aut* etiam *aut* thieum *codd.*: etiam thieum *Sillig*: etiam thyeum (*an recte?*) *Ianus.*

[4] ex limo *Mayhoff, coll.* § *37*: ex vino F: ex dh: om. *ceteri codd.*

---

[a] *Meleagrides* are guinea-fowl.

[b] The Gulf of Sidra.

records that near the Atlantic is a Lake Cephisis, called by the Moors Electrum, which, when thoroughly heated by the sun, produces from its mud amber that floats upon the surface of its waters. Mnaseas speaks of a district in Africa called Sicyon and of a River Crathis flowing into the Ocean from a lake, on the shores of which live the birds known as Meleager's Daughters [a] or Penelope Birds. Here amber is formed in the manner described above. Theo- § 37.
menes tells us that close to the Greater Syrtes [b] is the Garden of the Hesperides and a pool called Electrum, where there are poplar trees from the tops of which amber falls into the pool, and is gathered by the daughters of Hesperus. Ctesias [c] states that in India there is a River Hypobarus, a name which indicates that it is the bringer of all blessings. It flows from the north into the eastern Ocean near a thickly wooded mountain, the trees of which produce amber. These trees are called 'psitthacorae,' a word which means 'luscious sweetness.' Mithridates writes that off the coast of Carmania there is an island called Serita covered with a kind of cedar, from which amber flows down on to the rocks. Xenocrates asserts that amber in Italy is known not only as 'sucinum,' but also as 'thium'; and in Scythia as 'sacrium,' for there too it is found. He states that others suppose that it is produced from mud in Numidia. But all these authors are surpassed by the tragic poet Sophocles, and this greatly surprises me seeing that his tragedy is so serious and, moreover, his personal reputation in general stands so high, thanks

Mithridates VI ('the Great').

[c] A Greek of the late 5th century B.C. who worked as a doctor at the Persian Court and wrote on Persia and on India.

alias principi loco genito Athenis et rebus gestis et exercitu ducto. hic ultra Indiam fieri[1] dixit e lacrimis meleagridum avium Meleagrum deflentium.
41 quod credidisse eum aut sperasse aliis persuaderi posse quis non miretur? quamve[2] pueritiam tam inperitam posse reperiri, quae avium ploratus annuos credat lacrimasve tam grandes avesve, quae a Graecia, ubi Meleager periit, ploratum adierint Indos? quid ergo? non multa aeque fabulosa produnt poetae? sed hoc in ea re, quae cotidie invehatur atque abundet ac mendacium coarguat, serio quemquam dixisse summa hominum contemptio est et intoleranda mendaciorum inpunitas.

42 Certum est gigni in insulis septentrionalis oceani et ab Germanis appellari glaesum, itaque et ab nostris ob id unam insularum Glaesariam appellatam, Germanico Caesare res ibi gerente classibus, Austeraviam a barbaris dictam. nascitur autem defluente medulla pinei generis arboribus, ut cummis in cerasis, resina in pinis erumpit umoris abundantia.

[1] fieri FLdh: fluere B² *Sillig.*
[2] quamve: ullamve *coni. Mayhoff.*

[a] Amber (burmite) is found in N. Burma, but is hardly likely to have been known to Sophocles. The passage is not extant.

[b] The same root as 'glass,' 'glaze,' 'glare.'

[c] Baltic amber (succinite) comes not from an island, but from the Samland peninsula, N.W. of Danzig, where it is partly worked in open pits, partly mined and partly dredged from the sea. It is washed up on other parts of the Baltic coast and is occasionally carried to the east coast of Britain. It is a fossil resin exuded from an extinct pine, *Pinus succinifera.* Succinite contains up to 6% of succinic acid, and a considerable amount of this acid is present in most of the ancient amber objects found in Italy and Greece that have been chemically examined. The northern origin of the amber of which most of these objects were made is thus proved. As for the amber of S. Europe, the Sicilian contains very little succinic acid. The Rumanian contains some succinic acid, but is harder than succinite, and there is no evidence that it was known to the ancient world.

to his noble Athenian lineage, his public achievements and his leadership of an army. Sophocles tells us how amber is formed in the lands beyond India from the tears shed for Meleager by the birds known as Meleager's Daughters.[a] Is it not amazing that he should have held this belief or have hoped to persuade others to accept it? Can one imagine, one wonders, a mind so childish and naïve as to believe in birds that weep every year or that shed such large tears or that once migrated from Greece, where Meleager died, to the Indies to mourn for him? Well then, are there not many other equally fabulous stories told by the poets? Yes; but that anyone should seriously tell such a story regarding such a substance as this, a substance that every day of our lives is imported and floods the market and so confutes the liar, is a gross insult to man's intelligence and an insufferable abuse of our freedom to utter falsehoods.

It is well established that amber is a product of islands in the Northern Ocean, that it is known to the Germans as 'glaesum,'[b] and that, as a result, one of these islands, the native name of which is Austeravia, was nicknamed by our troops Glaesaria, or Amber Island, when Caesar Germanicus was conducting operations there with his naval squadrons. To resume, amber is formed of a liquid seeping from the interior of a species of pine, just as the gum in a cherry tree or the resin in a pine bursts forth when the liquid is excessively abundant.[c] The exudation A.D. 16.

densatur rigore vel tepore[1] aut mari,[2] cum ipsa[3] intumescens aestus rapuit ex insulis; certe[4] in litora expellitur, ita volubile ut pendere videatur atque
43 non[5] sidere in vado. arboris sucum esse etiam prisci nostri credidere, ob id sucinum appellantes. pinei autem generis arboris esse indicio est pineus in adtritu odor et quod accensum taedae modo ac nidore flagrat. adfertur a Germanis in Pannoniam maxime provinciam, et inde Veneti primum, quos Enetos Graeci vocaverunt, famam rei fecere proximique[6] Pannoniae et agentes circa mare Hadriaticum.
44 Pado vero adnexa fabula est evidente[7] causa, hodieque Transpadanorum agrestibus feminis monilium vice sucina gestantibus, maxime decoris gratia, sed et medicinae; creditur quippe tonsillis resistere et faucium vitiis, varie[8] genere aquarum iuxta
45 Alpis infestante guttura hominum. DC M p. fere a Carnunto Pannoniae abesse litus id Germaniae, ex quo invehitur, percognitum nuper, vivitque eques

[1] tepore d(?) *Hermolaus Barbarus*: tempore FLh *edd. vett.*, *Mayhoff.*
[2] aut mari BFdh: ac mari *Mayhoff.*
[3] ipsa B: ipsum *Mayhoff*: *om.* dh *edd. vett.*
[4] insulis; certe *codd.*, *Sillig* (*qui sic dist.*): insulis, certa *Mayhoff.*
[5] atque non (nos F) sidere F *Mayhoff*: *om.* BL *edd. vett.*
[6] proximique: proximi quippe *coni. Mayhoff.*
[7] evidente] evidenti de *coni. Mayhoff.*
[8] varie B[1]: variae F: vario B[2]L *edd. vett.*

[a] He is referring particularly to goitre.
[b] About 40 miles E. of Vienna, on the Danube near the mouth of the River March. The route to the Baltic would probably have been along the March, upper Oder and lower Vistula.

is hardened by frost or perhaps by moderate heat, or else by the sea, after a spring tide has carried off the pieces from the islands. At all events, the amber is washed up on the shores of the mainland, being swept along so easily that it seems to hover in the water without settling on the sea-bed. Even our forebears believed it to be a 'sucus,' or exudation, from a tree, and so named it 'sucinum.' That the tree to which it belongs is a species of pine is shown by the fact that it smells like a pine when it is rubbed, and burns like a pine torch, with the same strongly scented smoke, when it is kindled. It is conveyed by the Germans mostly into the province of Pannonia. From there it was first brought into prominence by the Veneti, known to the Greeks as the Enetoi, who are close neighbours of the Pannonians and live around the Adriatic. The reason for the story associated with the River Po is quite clear, for even to-day the peasant women of Transpadane Gaul wear pieces of amber as necklaces, chiefly as an adornment, but also because of its medicinal properties. Amber, indeed, is supposed to be a prophylactic against tonsilitis and other affections of the pharynx, for the water near the Alps has properties that harm the human throat in various ways.[a] The distance from Carnuntum[b] in Pannonia to the coasts of Germany from which amber is brought to us is some 600 miles, a fact which has been confirmed only recently. There is still living a Roman knight who was commissioned to procure amber by

R. ad id comparandum missus ab Iuliano curante gladiatorium munus Neronis principis. qui et commercia ea et litora peragravit, tanta copia invecta, ut retia coercendis feris podium protegentia [1] sucinis nodarentur, arma [2] vero et libitina totusque unius diei apparatus in variatione pompae singulorum dierum
46 esset e sucino. maximum pondus is glaebae attulit XIII librarum. nasci et in India certum est. Archelaus, qui regnavit in Cappadocia, illinc pineo cortice inhaerente tradit advehi rude polirique adipe suis lactentis incoctum. liquidum id primo destillare argumento sunt quaedam intus tralucentia, ut formicae culicesque et lacertae, quae adhaesisse musteo non est dubium et inclusa durescente eodem remansisse.

47 XII. Genera eius plura sunt. ex iis candida odoris praestantissimi, sed nec his nec cerinis pretium. fulvis maior auctoritas. ex iis etiamnum amplior [3] tralucentibus, praeterquam si nimio ardore flagrent; imaginem igneam in iis esse, non ignem, placet. summa laus Falernis a vini colore dictis, molli fulgore

[1] protegentia dha: egentia B: tegentia *Sillig.*
[2] arma *codd.*: harena *Detlefsen* (*coll.* *XXXIII.90, XXXVI.162*), *Mayhoff.*
[3] amplior *aliquot codd.*: amplius B *Mayhoff.*

[a] For removing the dead gladiators.
[b] Was this Burmese amber? More probably lac-resin (shellac).

Julianus when the latter was in charge of a display of gladiators given by the Emperor Nero. This knight traversed both the trade-route and the coasts, and brought back so plentiful a supply that the nets used for keeping the beasts away from the parapet of the amphitheatre were knotted with pieces of amber. Moreover, the arms, biers [a] and all the equipment used on one day, the display on each day being varied, had amber fittings. The heaviest lump that was brought by the knight to Rome weighed 13 pounds. It is certain that amber is to be found also in India.[b] Archelaus,[c] who was king of Cappadocia, relates that it is brought from India in the rough state with pine bark adhering to it, and that it is dressed by being boiled in the fat of a sucking-pig. That amber originates as a liquid exudation is shown by the presence of certain objects, such as ants, gnats and lizards, that are visible inside it. These must certainly have stuck to the fresh sap and have remained trapped inside it as it hardened.

XII. There are several kinds of amber. Of these, the pale kind has the finest scent,[d] but, like the waxy kind, it has no value. The tawny is more valuable; and still more so if it is transparent, but the colour must not be too fiery: not a fiery glare, but a mere suggestion of it, is what we admire in amber. The most highly approved specimens are the 'Falernian,' so called because they recall the colour of the wine: they are transparent and glow gently,

[c] Perhaps the Archelaus who was the nominee of Mark Antony.
[d] Because of the scent, Roman women liked to hold amber in their hands (Juvenal *Sat.* VI. 573–4).

perspicuis [1] in quibus et decocti mellis lenitas placeat.
48 verum hoc quoque notum fieri oportet, quocumque modo ea tinguere libeat [2] tingui haedorum sebo et anchusae radice, quippe iam et conchylio inficiuntur. ceterum attritu digitorum accita [3] caloris anima trahunt in se paleas et folia arida et philyras, ut magnes lapis ferrum. ramenta quoque eius [4] oleo addito flagrant dilucidius diutiusque quam lini
49 medulla. taxatio in deliciis tanta ut hominis quamvis parva effigies vivorum hominum vigentiumque pretia exsuperet, prorsus ut castigatio una non sit satis. in Corinthiis aes placet argento auroque mixtum, in caelatis ars et ingenia; myrrhinorum et crystallinorum diximus gratiam; uniones capite circumferuntur, gemmae digitis; in omnibus denique aliis vitiis aut ostentatio aut usus placet: in sucinis
50 sola deliciarum conscientia. Domitius Nero in ceteris vitae suae portentis capillos quoque Poppaeae

[1] perspicuis, in quibus *dist. Sillig.*

[2] ea tinguere libeat tingui B: libeat tingui FL: libeat ea tingui *Mayhoff.*

[3] accita *ego*: accepta *codd.*: *an* accersita? *Sed nescio an erraverit Plinius ipse.*

[4] eius: ex iis *coni. Mayhoff.*

[a] The modern technique is to open a fissure, introduce colouring matter and heat the amber. The root of alkanet, which was commonly used for rouge in antiquity, would have reddened the amber.

[b] *Accita* (for accepta) gives the required sense: see n. [d], below.

[c] See Introduction, pp. x, xii.

[d] *Cf.* Plutarch *Plat. quaest.* VII. 7, where it is suggested that the hot exhalation released by rubbing amber acts in the same way as the emanations from the magnet. That is, it displaces air, forming a vacuum in front of the attracted object

so as to have, moreover, the agreeably mellow tint of honey that has been reduced by boiling. However, it ought to be generally known also that amber can be tinted, as desired, with kid-suet and the root of alkanet.[a] Indeed, it is now stained even with purple dye. To resume, when rubbing with the fingers draws forth [b] the hot exhalation,[c] amber attracts straw, dry leaves and linden-bark, just as the magnet attracts iron.[d] Moreover, amber chippings, when steeped in oil, burn brighter and longer than the pith of flax. Its rating among luxuries is so high that a human figurine, however small, is more expensive than a number of human beings,[e] alive and in good health; and as a result it is quite impossible for a single rebuke to suffice.[f] In the case of Corinthian bronzes, we are attracted by the appearance of the bronze, which is alloyed with gold and XXXIV.
silver; and in the case of chased metalwork, by 6–8.
artistry and inventiveness. Vessels of fluor-spar and rock-crystal have beauties which we have already described. Pearls can be carried about on the head, §§ 21–29.
and gems on the finger. In short, every other substance for which we have a weakness pleases us because it lends itself either to display or to practical use, whereas amber gives us only the private satisfaction of knowing that it is a luxury. Among the other portentous events of his career is the fact that Domitius Nero bestowed this name on the hair of his A.D. 54–68.

and driving air to the rear of it. *Cf.* XXXVI. 127, and p. 100, n. [c].

[e] *I.e.*, slaves.

[f] Pliny proceeds to repeat more elaborately the criticism already levelled against amber in § 30.

coniugis suae in hoc nomen adoptaverat quodam etiam carmine sucinos appellando, quoniam nullis vitiis desunt pretiosa nomina; ex eo tertius quidam[1] hic colos coepit expeti matronis.

Usus tamen aliquis sucinorum invenitur in medicina, sed non ob hoc feminis placent.[2] infantibus adal-
51 ligari amuleti ratione prodest. Callistratus prodesse etiam cuicumque aetati contra lymphationes tradit et urinae difficultatibus potum adalligatumque. hic et differentiam novam fecit appellando chryselectrum quod sit coloris aurei et matutino gratissimi aspectus, rapacissimum ignium, si iuxta fuerint, celerrime ardescens. hoc collo adalligatum mederi febribus et morbis, tritum vero cum melle ac rosaceo aurium vitiis et, si cum melle Attico teratur, oculorum quoque obscuritati, stomachi etiam vitiis vel per se farina eius sumpta vel cum mastiche pota ex aqua. sucina et gemmis quae sunt tralucidae adulterandis magnum habent locum, maxime amethystis, cum tamen omni, ut diximus, colore tinguantur.

52 XIII. De lyncurio proxime dici cogit auctorum

[1] quidam hic FLa: hic B.
[2] placent dh: placet B.

---

[a] Besides 'dark' and 'fair.' Mayhoff, however, supposes that women were aspiring to *amber* of a third colour, the other

wife Poppaea, even going so far as to call it in one of his poems 'sucini,' or 'amber-coloured,' for no defect lacks a term that represents it as an asset. From that time, respectable women began to aspire to this as a third possible colour for their hair.[a]

However, amber is found to have some use in pharmacy, although it is not for this reason that women like it. It is of benefit to babies when it is attached to them as an amulet. Callistratus says that it is good also for people of any age as a remedy for attacks of wild distraction and for strangury, both taken in liquid and worn as an amulet. This writer also introduces a fresh distinction, giving the name 'chryselectrum,' or 'gold amber,' to a kind which is golden in colour and has a most delightful appearance early in the day, but which very easily catches fire and flares up in a moment when it is close to flames. According to Callistratus, this kind of amber cures fevers and diseases when worn as an amulet on a necklace, affections of the ears when powdered and mixed with honey and rose oil, as well as weak sight if it is powdered and blended with Attic honey, and affections even of the stomach if it is either taken as a fine powder by itself or swallowed
in water with mastic. Amber plays an important XII. 72.
part also in the making of artificial transparent gems, particularly artificial amethysts, although, as I have
mentioned, it can be dyed any colour. § 48.

XIII. It is the obstinacy of our authorities that *Lyncurium.*

two kinds being *Falerna* and *mellea* (§ 47). This is a forced interpretation. In any case, why should women have been especially interested in a kind of amber which by implication is merely amber-coloured?

pertinacia, quippe, etiamsi non electrum id esse contendunt lyncurium,[1] tamen gemmam esse volunt,[2] fieri autem adfirmant[3] ex urina quidem lyncis, sed et genere terrae, protinus eo animali urinam operi-
53 ente, quoniam invideat homini, ibique lapidescere. esse autem, qualem in sucinis, colorem igneum, scalpique nec folia tantum aut stramenta ad se rapere, sed aeris etiam ac ferri lamnas, quod Diocli cuidam Theophrastus quoque credit. ego falsum id totum arbitror nec visam in aevo nostro gemmam ullam ea appellatione. falsum et quod de medicina simul proditur, calculos vesicae poto eo elidi et morbo regio succurri, si ex vino bibatur aut spectetur etiam.

54 XIV. Nunc gemmarum confessa genera dicemus ab laudatissimis orsi, nec vero id solum agemus, sed etiam maiore utilitate vitae obiter[4] coarguemus Magorum infandam vanitatem, quando vel plurima illi prodidere de gemmis ab medicinae blandissima specie ad prodigia transgressi.

[1] id esse contendunt lyncurium B *Sillig* (*qui* contendunt, lyncurium *dist.*): id *Mayhoff*.
[2] volunt B: contendunt dh *cod. Poll.*, *Mayhoff*.
[3] autem adfirmant B: autem dh *cod. Poll.*, *Mayhoff*.
[4] vitae obiter (obitum F) Fdh: vitae B *Mayhoff*.

---

[a] Brown tourmaline has the electrical properties mentioned in § 53. But this stone is represented rarely, if at all, in modern collections of ancient gems. The term may have been extended to hessonite, which occurs more frequently in collections and resembles brown tourmaline without possessing its electrical properties. The form *lyncurium* is probably due to a false etymology. *λιγγούριον*, cited by Strabo (IV. 6, 2) as a Ligurian term for amber, may be a more correct form.

It is suggested that the term originally meant 'the Ligurian stone' and was applied to amber (*cf.* §§ 33 and 34). Later the term may have been applied to one or more kinds of hard gemstone similar to amber in their colour and electrical properties (J. H. Whatmough).

compels me to speak next of lyncurium,[a] since, even when they refrain from asserting that this lyncurium is amber, they still claim that it is a gemstone, stating that it is formed indeed from the urine of the lynx, but also from a particular kind of earth. They say that the creature, bearing a grudge towards mankind, immediately conceals its urine, VIII. 137.
which forms a stone in the same place. The stone is said to have the same fiery colour as amber, to be capable of being engraved and to attract not merely leaves or straws, but also shavings of copper and iron, a belief which even Theophrastus accepts on the *de Lap.* 28.
authority of a certain Diocles. I for my part am of the opinion that the whole story is false and that no gemstone bearing this name has been seen in our time. Also false are the statements made simultaneously about its medical properties, to the effect that when it is taken in liquid it breaks up stone in the bladder, and that it relieves jaundice if it is swallowed in wine or even looked at.

XIV. Now I shall discuss those kinds of gemstones that are acknowledged as such, beginning with the finest. And this shall not be my only aim, but to the greater profit of mankind I shall incidentally confute the abominable falsehoods of the Magi, since in very many of their statements about gems they have gone far beyond providing an alluring substitute for medical science into the realms of the supernatural.

55 XV. Maximum in rebus humanis, non solum inter
gemmas, pretium habet adamas, diu non nisi regibus
et iis admodum paucis cognitus. ita appellabatur
auri nodus in metallis repertus perquam raro comes
auri [1] nec nisi in auro nasci videbatur. veteres eum
in Aethiopum metallis tantum inveniri existimavere
inter delubrum Mercuri et insulam Meroen, dixerunt-
que non ampliorem cucumis semine aut colore dis-
56 similem inveniri. nunc primum [2] genera eius sex
noscuntur: Indici [3] non in auro nascentis et quadam
crystalli cognatione, siquidem et colore tralucido non
differt [4] et laterum sexangulo levore,[5] turbinati in
mucronem e duabus contrariis partibus, quo magis
miremur, ut si duo turbines latissimis partibus
iungantur, magnitudine vero etiam abellani nuclei.
similis est huic Arabius, minor tantum, similiter et
nascens. ceteris pallor argenti et in auro non nisi
57 excellentissimo natalis. incudibus hi deprehen-

[1] comes auri *in uncis ponit Mayhoff.*
[2] nunc primum B: nunc Fdh *edd. vett., Detlefsen.*
[3] Indici] primum Indici *Detlefsen.*
[4] differt dh *cod. Poll.*: differunt B.
[5] levore, turbinati *dist. Mayhoff.*

---

[a] *Adamas* is left untranslated because the term refers to other stones besides diamonds.

[b] *Auri nodus* is Pliny's rendering of χρυσοῦ ὄζος (Plato, *Timaeus* 56b). Greek poets, such as Hesiod and Aeschylus, seem to have meant by ἀδάμας steel or tempered iron; and Plato, in a passage (*l.c.*) relating to the formation of metals, probably used it in a similar sense. Later it was applied to various hard stones. ἤλεκτρον, which denotes both amber and an alloy of gold and silver, is another term which was similarly applied to metallic and non-metallic substances.

[c] In the Northern Sudan.

Adamas.

XV. The most highly valued of human possessions, let alone gemstones, is the 'adamas,'[a] which for long was known only to kings, and to very few of them. 'Adamas' was the name given to the 'knot of gold'[b] found very occasionally in mines in association with gold and, so it seemed, formed only in gold. Our ancient authorities thought that it was found only in the mines of Ethiopia between the temple of Mercury and the island of Meroe,[c] and stated that the specimens discovered were no larger than a cucumber seed and not unlike one in colour. Now, for the first time, as many as six kinds of 'adamas' are recognized. There is the Indian, which is not formed in gold and has a certain affinity with rock-crystal, which it resembles in respect of its transparency and its smooth faces meeting at six corners.[d] It tapers to a point in two opposite directions and is all the more remarkable because it is like two whorls joined together at their broadest parts. It can be as large even as a hazel nut. Similar to the Indian, only smaller, is the Arabian, which is, moreover, formed under similar conditions. The rest have a silvery pallor and are liable to be formed only in the midst of the finest gold. All these stones can be

[d] The phrase *laterum sexangulo levore* might well be translated 'with smooth hexagonal faces,' but Pliny seems to be trying to describe the octahedral diamond, which does in fact taper to a point in two opposite directions and has smooth faces meeting at six corners. Possibly Pliny misunderstood his source. There is no reason why Indian diamonds should not have been known in his time. There is a clear allusion to diamonds in the *Astronomica* (IV. 926) of Manilius, who was writing late in Augustus' principate and early in that of Tiberius (Stanley Smith).

duntur ita respuentes ictus ut ferrum utrimque dissultet, incudes ipsae etiam exiliant.[1] quippe duritia est inenarrabilis, simulque ignium victrix natura et numquam incalescens, unde et nomen—interpretatione[2] Graeca indomita vis—accepit. unum ex iis vocant cenchron, milii magnitudine, alterum Macedonium, in Philippico auro repertum;
58 hic est cucumis semini par. post hos Cyprius vocatur in Cypro repertus, vergens ad aereum colorem, sed in[3] medica vi, de qua dicemus, efficacissimus. post hunc siderites ferrei splendoris, pondere ante ceteros, sed natura dissimilis. namque et ictibus frangi et alio adamante perforari potest, quod et Cyprio evenit, breviterque ut degeneres nominis tantum auctoritatem habent.

59 Nunc quod totis voluminibus his docere conati sumus de discordia rerum concordiaque, quam antipathian Graeci vocavere ac sympathian, non aliter clarius intellegi potest, siquidem illa invicta vis, duarum violentissimarum naturae rerum ferri ignium-

[1] exiliant B: dissiliant dh *edd. vett.*
[2] interpretatione Graeca indomita vis *in uncis ponunt Detlefsen, Mayhoff.*
[3] sed in] sed *Mayhoff.*

[a] Diamonds can be broken with a hammer, but are unaffected by heat unless it reaches a temperature of about 1000° C.
[b] ἀδάμας literally means ' unvanquished.'
[c] The Ethiopian and Arabian stones may both have been diamonds, imported from India, but traded as indigenous products. *Cenchros* was perhaps a trade name for a small diamond. The Macedonian was probably quartz crystal.

tested upon an anvil, and they are so recalcitrant to blows that an iron hammer head may split in two and even the anvil itself be unseated. Indeed, the hardness of ' adamas ' is indescribable, and so too that property whereby it conquers fire and never becomes heated.[a] Hence it derives its name, because, according to the meaning of the term in Greek, it is the ' unconquerable force.'[b] One of these stones is called in Greek ' cenchros,' or millet seed, and is like a millet seed in size. A second is known as the Macedonian and is found in the gold-mines of Philippi. This is equal in size to a cucumber seed. Next comes the so-called Cyprian, which is found in Cyprus and tends towards the colour of copper, but has potent medical properties, which I shall describe later. § 61.
After this, there is the ' siderites,' or ' iron stone,' which shines like iron and exceeds the rest in weight, but has different properties. For it can not only be broken by hammering but also be pierced by another ' adamas.' This can happen also to the Cyprian kind, and, in a word, these stones, being untrue to their kind, possess only the prestige of the name they bear.[c]

Now throughout the whole of this work I have tried to illustrate the agreement and disagreement that exist in Nature, the Greek terms for which are respectively ' sympathia, ' or ' natural affinity,' and ' antipathia,' or ' natural aversion.'[d] Here more clearly than anywhere can these principles be discerned. For this ' unconquerable force ' that defies

The Cyprian may have been analcime (hydrous sodium aluminium silicate), and *siderites* iron pyrites (Stanley Smith).
[d] *Cf.* XXXVI. 130 and p. 104, n. [c].

que contemptrix, hircino rumpitur sanguine, neque aliter quam recenti calidoque macerata et sic quoque multis ictibus, tunc etiam praeterquam eximias
60 incudes malleosque ferreos frangens. cuius hoc invento quove casu repertum? aut quae fuit coniectura experiendi rem inmensi pretii in foedissimo animalium? numinum profecto talis inventio est et hoc munus omne, nec quaerenda ratio in ulla parte naturae, sed voluntas! cum feliciter contigit rumpere, in tam parvas friatur [1] crustas ut cerni vix possint. expetuntur hae scalptoribus ferroque includuntur, nullam non duritiam ex facili cavantes.
61 adamas dissidet cum magnete in tantum ut iuxta positus ferrum non patiatur abstrahi aut, si admotus magnes adprehenderit, rapiat atque auferat. adamas et venena vincit atque inrita facit et lymphationes abigit metusque vanos expellit a mente. ob id quidam eum ananciten [2] vocavere. Metrodorus Scepsius in eadem Germania Basilia [3] insula nasci, in qua et sucinum, solus, quod equidem legerim, dicit et praefert Arabicis. quod esse falsum quis dubitet?

[1] friatur *Sillig* (*e coni. Iani*): fruatur B: feriantur *aut* frangantur *ceteri codd.*
[2] ananciten BF: anchiten La *edd. vett.*
[3] Basilia *Hardouin*; *cf.* § *36*: balista *codd.*

---

[a] Of course, untrue.
[b] It is estimated that the diamond is at least ninety times as hard as corundum, such as emery.
[c] Both statements are fictitious.

Nature's two most powerful substances, iron and fire, can be broken up by goat's blood.[a] But it must be steeped in blood that is fresh and still warm, and even so needs many hammer blows. Even then, it may break all but the best anvils and iron hammers. To whose researches or to what accident must we attribute this discovery? What inference could have led anyone to use the foulest of creatures for testing a priceless substance such as this? Surely it is to divinities that we must attribute such inventions and all such benefits. We must not expect to find reason anywhere in Nature, but only the evidence of will! When an 'adamas' is successfully broken it disintegrates into splinters so small as to be scarcely visible. These are much sought after by engravers of gems and are inserted by them into § 200.
iron tools because they make hollows in the hardest materials without difficulty.[b] The 'adamas' has so strong an aversion to the magnet that when it is placed close to the iron it prevents the iron from being attracted away from itself. Or again, if the magnet is moved towards the iron and seizes it, the 'adamas' snatches the iron and takes it away.[c] 'Adamas' prevails also over poisons and renders them powerless, dispels attacks of wild distraction and drives groundless fears from the mind. For this reason the Greeks sometimes call it 'anancites,' or 'compulsive.' Metrodorus of Scepsis is alone, so far § 35.
as I know from my own reading, in stating that 'adamas' is found likewise in Germany, namely on the island of Basilia, which also produces amber, and § 36.
in preferring this 'adamas' to that of Arabia. There can be no doubt that this statement is untrue.

62 XVI. Proximum apud nos Indicis Arabicisque margaritis pretium est, de quibus in nono diximus volumine inter res marinas.

Tertia auctoritas smaragdis perhibetur pluribus de causis, quippe nullius coloris aspectus iucundior est. nam herbas quoque silentes[1] frondesque avide spectamus, smaragdos vero tanto libentius, quoniam
63 nihil omnino viridius comparatum illis viret. praeterea soli gemmarum contuitu inplent oculos nec satiant. quin et ab intentione alia aspectu smaragdi recreatur acies, scalpentibusque gemmas non alia gratior oculorum refectio est: ita[2] viridi lenitate lassitudinem mulcent.[3] praeterea longinquo amplificantur visu inficientes circa se repercussum aëra, non sole mutati, non umbra, non lucernis, semperque sensim radiantes et visum admittentes ad crassitudinem sui facilitate tralucida, quod etiam in aquis
64 nos iuvat. iidem plerumque concavi, ut visum conligant. quam ob rem decreto hominum iis

[1] silentes B *Mayhoff, coll. Colum. IV.27.1, etc.*: virentes *aut* virentis *cett. codd.*
[2] ita dh: in B.
[3] mulcent dh: mulcens B.

---

[a] Lit. 'plants not yet in bud,' reading with B *silentes*, which Columella uses several times in this sense, *e.g.*, IV. 27, 1, *silentibus vineis*.

[b] Lit. 'because they tinge around them the air rebounding from them.' *Cf.* XXXIII. 128, where the reflection of images is ascribed to the air 'rebounding' from a mirror. Here the reflection of colour is assumed to be caused in the same way.

[c] Does Pliny imply that the concave stone could be used as a lens? This is improbable, because a green gemstone would hardly serve the purpose. Moreover, although magni-

XVI. Next in value in our estimation come the pearls of India and Arabia, which we discussed in Book IX among the products of the sea. *Pearls.* IX. 106–123.

The third rank among gemstones is assigned for several reasons to the 'smaragdus.' Certainly, no colour has a more pleasing appearance. For although we gaze eagerly at young plants[a] and at leaves, we look at 'smaragdi' with all the more pleasure because, compared with them, there is nothing whatsoever that is more intensely green. Moreover, they alone of gems, when we look at them intently, satisfy the eye without cloying it. Indeed, even after straining our sight by looking at another object, we can restore it to its normal state by looking at a 'smaragdus'; and engravers of gemstones find that this is the most agreeable means of refreshing their eyes: so soothing to their feeling of fatigue is the mellow green colour of the stone. Apart from this property, 'smaragdi' appear larger when they are viewed at a distance because they reflect their colour upon the air around them.[b] They remain the same in sunlight, shadow or lamplight, always shining gently and allowing the vision to penetrate to their further extremity owing to the ease with which light passes through them, a property that pleases us also in respect of water. 'Smaragdi' are generally concave in shape, so that they concentrate the vision.[c] Because of these properties, mankind has decreed *Smaragdi.*

fying mirrors were known in antiquity, there is no certain evidence that anything was known of magnifying lenses, although magnifying lenses of short focus may possibly have been used by engravers. Pliny is presumably theorizing about the beneficial effects of 'smaragdi' on the sight.

parcitur scalpi vetitis. quamquam Scythicorum Aegyptiorumque duritia tanta est ut non queant volnerari. quorum vero corpus extentum est, eadem qua specula ratione supini[1] rerum imagines reddunt. Nero princeps gladiatorum pugnas spectabat in smaragdo.[2]

65 XVII. Genera eorum duodecim: nobilissimi Scythici, ab ea gente in qua reperiuntur appellati. nullis maior austeritas nec minus vitii; quantum smaragdi a gemmis distant, tantum Scythicus a ceteris smaragdis. proximam laudem habent, sicut et sedem, Bactriani. in commissuris saxorum colligere eos dicuntur etesiis flantibus; tunc enim tellure deoperta internitent, quia[3] iis ventis harenae maxime moventur. sed hos minores multo Scythicis esse tradunt. tertium locum Aegyptii habent. eruuntur circa Copton, oppidum Thebaidis, collibus excavatis.

[1] supini (suppini FL) rerum FLadh: supinis rebus B *Sillig.*
[2] in smaragdo B *Sillig, Mayhoff*: smaragdo *ceteri codd.*
[3] quia *cod.* d, *cod. Poll.*: et quia B.

---

[a] These alone of Pliny's *smaragdi* were true emeralds. Few precious stones are harder than the emerald. See p. 330, n. [b].

[b] Reading *in smaragdo* with B. The context shows that Pliny was thinking of a reflecting stone. Probably Nero merely looked at the stone to relieve his eyes from the glare of the arena. The inferior reading *smaragdo* has given rise to the belief that Nero used a green stone as an eye-glass.

[c] Doubtless from the workings near the Takovaya river in the Urals, about 50 miles E. of Sverdlovsk. From here the stones could have reached the River Don and the Black Sea.

[d] The northerly winds that blow over the Aegean in the late summer. Theophrastus (see n. [e]) uses the term of similar seasonal winds blowing over the deserts of Persia (or, as he thought, of Bactria).

that 'smaragdi' must be preserved in their natural state and has forbidden them to be engraved. In any case, those of Scythia and Egypt are so hard as to be unaffected by blows.[a] When 'smaragdi' that are tabular in shape are laid flat, they reflect objects just as mirrors do. The Emperor Nero used to watch the fights between gladiators in a reflecting 'smaragdus.'[b] § 8.

XVII. There are twelve kinds of 'smaragdus.' *Emeralds.* The most notable is the Scythian,[c] so called from the nation in whose territory it is found. No kind is deeper in colour or more free from defects: it differs as widely in quality from the other 'smaragdi' as they from the other gems. Next to this in esteem, as also in locality, is the Bactrian. These stones are said to be gathered by the natives in the fissures of rocks when the Etesians[d] blow. For at this season the ground is uncovered and the stones glitter here and there because the sands of the desert are shifted violently by these winds.[e] These stones, however, are said to be much smaller than the Scythian. Third in order come those of Egypt, which are dug near Coptos, a city of the Thebaid, from mines in the hills.[f]

[e] The passage *in commissuris . . . moventur* is a garbled paraphrase of Theophrastus *de Lap.* 35, *in commissuris saxorum, etc.*, being a mistranslation of εἰς τὰ λιθοκόλλητα χρῶνται. Pliny or his authority gratuitously assumed that Theophrastus was referring to *smaragdi*, whereas he was alluding to one of the blue stones used by the Persians in inlay-work, probably the blue turquoise. The Bactrian *smaragdus* is therefore a fiction.

[f] These are the same as the Ethiopian emeralds of § 69, where Pliny, citing Juba, describes their provenance more accurately.

66 Reliqua genera in metallis aerariis inveniuntur, quapropter principatum ex iis optinent Cyprii. dos eorum est in colore liquido nec diluto, verum ex umido pingui quaque perspicitur imitante tralucidum maris, pariterque ut traluceat et niteat, hoc est ut colorem expellat, aciem recipiat.[1] ferunt in ea insula tumulo reguli Hermiae iuxta cetarias marmoreo leoni fuisse inditos oculos e smaragdis ita radiantibus etiam in gurgitem ut territi thynni refugerent, diu mirantibus novitatem piscatoribus,
67 donec mutavere oculis gemmas. XVIII. Sed et vitia demonstrari convenit in tam prodigis pretiis. sunt quidem omnium eadem, quaedam tamen nationum peculiaria, sicut in homine. ergo Cyprii, varie glauci magisque ac minus in eodem smaragdo aliis partibus, tenorem illum Scythicae austeritatis non semper custodiunt. ad hoc quibusdam intercurrit umbra, surdusque fit colos, qui inprobatur
68 etiam dilutior. hinc genera distinguntur, ut sint aliqui obscuri, quos vocant caecos, alii densi nec e

[1] hoc est ut colorem expellat, aciem recipiat B: *in uncis ponit Mayhoff.*

[a] Malachite crystals. These are found in copper-mines, but several of 'the other kinds' are not malachite, and are not found in copper-mines, as Pliny supposes.

[b] Possibly the clear green crystalline quartz known as mother-of-emerald. It is known also as prase, but this term is often applied to an opaque or semi-opaque green chalcedony (XXXVII. 113).

Malachite, etc.

The other kinds are found in copper-mines, and so the first place among them is held by the stones of Cyprus.[a] Their special asset is their colour, which is limpid without being at all faint. On the contrary, it combines body and clarity, and, wherever one peers through the stones, reproduces the transparency of sea-water, the stones being in an equal degree translucent and brilliant. In other words, they dissipate their colour and also allow the sight to penetrate within. There is a story that in this island there stood on the burial-mound of a prince named Hermias, not far from the tunny-fisheries, the marble statue of a lion, into which had been inserted eyes made of 'smaragdus';[b] and these, it is said, blazed so brightly, even far below the surface of the sea, that the tunnies fled in terror, and the fishermen were long puzzled by this strange behaviour until finally they changed the gemstones in the eye-sockets.

XVIII. But since high prices are so freely paid for these stones, it is only right that we should point out their defects, some of which are common to every kind, while others are regional peculiarities, as with human beings. Thus the Cyprian stones show various shades of sea-green, and these may be more or less intense in different parts of the same 'smaragdus,' so that the stones do not always maintain the familiar uniform deep colour of the Scythian variety. Moreover, some stones are traversed by a 'shadow'; this makes the colour dull, and the fainter the colour, the more serious the defect. In accordance with these defects, 'smaragdi' are divided into classes, some, which are called 'blind,' being opaque, while

liquido tralucidi, quidam varii, quidam nubecula obducti. aliud est haec quam umbra, de qua diximus. nubecula albicantis est vitium, cum viridis non pertransit aspectus, sed aut intus occurrit aut excipit in fine visum candor hic [1] coloris. sunt item vitia [2] capillamentum, sal, plumbago, quae communia fere sunt.

69 Ab his Aethiopici laudantur ab Copto dierum itinere, ut auctor est Iuba, xxv, acriter virides, sed non facile puri aut concolores. Democritus in hoc genere ponit Thermiaeos [3] et Persicos, illos intumescentes pinguiter, Persicos vero non tralucidos, sed iucundi tenoris visum inplere, quem non admittant, felium pantherarumque oculis similes, namque et illos radiare nec perspici, eosdem in sole hebetari, in umbra refulgere [4] et longius quam
70 ceteros nitere. omnium horum etiamnum vitium, quod fellis colorem aut acris olei habent, dilucidi

[1] hic B: hec L: haec *Mayhoff* (*cum* vitia).
[2] sunt item vitia B: sunt vitia, item corporis *Mayhoff*: vitia ista corporis L: *om.* Fdh.
[3] Thermiaeos B: Hermiaeos F: Hermineos *Caesarius. Nulla lectio satisfacit.*
[4] refulgere dh: fulgere B.

---

[a] Lit. 'dense.'
[b] These are identical with the Egyptian emeralds of § 65. The mines were those of Gebel Zubara and Gebel Sikait, lying close to the caravan route which led from Coptos to the Red Sea port of Berenice on the Ethiopian border. The district is about 180 miles from Coptos.
[c] Possibly green turquoise. Bolos of Mendes (*c.* 200 B.C.) wrote on *mirabilia* and on the counterfeiting of precious

others, instead of being transparent to translucent, are sub-opaque.[a] Some again are variegated, and some enveloped in a 'cloud.' This differs from the 'shadow' mentioned above. 'Cloud' is a defect § 67. belonging to a stone with a whitish hue in it, when the green appearance does not pervade the whole stone, but the vision is either blocked beneath the surface or intercepted at the surface by this white inclusion. Filaments, specks like salt and inclusions resembling lead are also defects; and these are common to nearly all varieties.

Ethiopian (Egyptian) emeralds.

Next in esteem to the Cyprian 'smaragdi' come the Ethiopian, which, according to Juba, are found at a distance of twenty-five days' journeying from Coptos, and are bright green, although they are rarely flawless or uniform in tint.[b] Democritus includes in this class the Thermiaean and Persian stones.[c] He states that the former are massive [d] and convex, while the Persian stones, although they are not transparent, satisfy the eye with their agreeably uniform colour without allowing it to see within. He compares them to the eyes of cats and leopards, which likewise shine without being transparent, and mentions, moreover, that the stones are dimmed in sunlight, glisten in shadow and shine farther than other stones. All these varieties have a further defect in that their colour may be that of gall or rancid oil, so that they may be bright and clear,

Other varieties of 'smaragdus.'

metals and gemstones. Some of his works were falsely attributed to Democritus.
[d] *Pinguiter* might refer to colour or lustre ('dully'), but here seems to refer to structure. *Cf. minus pingues* below (§ 70).

quidem ac liquidi, sed non virides. haec vitia in Atticis maxime sentiuntur in argentariis metallis repertorum[1] in loco qui Thoricos vocatur, semper minus pingues, sed ex longinquo speciosiores. frequens est in his et plumbago, hoc est ut in sole plumbei videantur. illud peculiare, quod quidam ex his senescunt, paulatim viriditate evanida, et sole
71 quoque laeduntur. post hos Medici plurimum habent varietatis, interdum aliquid et e sappiro. hi sunt fluctuosi ac rerum imagines complexi, papaverum verbi gratia aut avium catulorumque vel pinnarum,[2] qui tamen virides nasci videntur, quoniam oleo meliores fiunt, neque est aliorum
72 amplitudo maior. Calchedonii—nescio an in totum —exoleverunt, postquam metalla aeris ibi defecerunt, et semper tamen vilissimi fuere minimique, iidem fragiles et[3] coloris incerti et virentium in caudis pavonum columbarumque e collo plumis similiter ad inclinationem magis aut minus lucidi, venosi iidem
73 squamosique. erat et peculiare in iis vitium sarcion appellatum, hoc est quaedam gemmae caro. mons

[1] repertorum. B *Mayhoff, qui sic dist.*: repertis dh *edd. vett.*
[2] pinnarum, qui *codd., Sillig, qui sic dist.*: pinnarum. quidam *Mayhoff.*
[3] et h: set L: ed F: sed Bd *edd. vett.*

---

[a] Probably calamine (zinc carbonate), good green specimens of which have been found in the silver-mines of Laurium.
[b] *I.e.*, the Hermiaean and Persian stones.
[c] Turquoise, being to some extent porous, is apt to deteriorate with use.
[d] Malachite: see the next note.
[e] Malachite (green copper carbonate) intergrown with azurite (blue copper carbonate), which resembles lapis lazuli in colour.

and yet not green. These faults are particularly noticeable in the Attic stones[a] found in the silver-mines at a place called Thoricus. They are always less massive than the others,[b] but are more handsome
when seen at a distance. These stones too are often § 68.
marred by lead-like inclusions, as a result of which they resemble lead when they are seen in sunlight. One peculiarity is that some of these stones show the effects of age as their green colour gradually fades away and, moreover, are damaged by exposure to the sun.[c] After these come the Median stones,[d] which show a great variety of tints and on occasion are even blended to some extent with lapis lazuli.[e] These stones have undulating bands and contain inclusions resembling various objects, for example, poppy heads, birds, the young of animals or feathers. Such stones, in spite of their varied colours, seem to be green by nature, since they may be improved by being steeped in oil[f]; and there is no variety that displays larger specimens. The 'smaragdi' of Chalcedon have perhaps completely disappeared now that the copper-mines in the district have failed; and, in any case, they were always worthless and very small. Moreover, they were brittle and of a nondescript colour, this being more or less bright according to the angle at which it was viewed, like the green feathers in a peacock's tail or on a pigeon's neck. Furthermore, they were marked with veins and were scaly. They had also a characteristic defect called 'sarcion,' that is a kind of fleshy growth on the stone. There is a

Pliny probably means that green seems to be the natural colour, because this colour is the one 'restored' by steeping the stones in oil.

est iuxta Calchedonem, in quo legebantur, Smaragdites vocatus. Iuba auctor est smaragdum quam chloran vocent [1] in Arabia aedificiorum ornamentis includi et lapidem quem alabastriten Aegyptii vocent, complures vero e proximis [2] et Laconicos [3] in Taygeto monte erui Medicis similes et alios in Sicilia.

74 XIX. Inseritur smaragdis et quae vocatur tanos e Persis veniens gemma, ingrate viridis atque intus sordida, itidem chalcosmaragdos e Cypro, turbida aereis venis. Theophrastus tradit in Aegyptiorum commentariis reperiri regi eorum a rege Babylonio muneri missum smaragdum quattuor cubitorum longitudine ac trium latitudine, et fuisse apud eos in Iovis delubro obeliscum e quattuor smaragdis quadraginta cubitorum longitudine, latitudine vero in parte
75 quattuor, in parte duorum, se autem scribente esse in Tyro Herculis templo stelen amplam e smaragdo,

[1] vocent *Sillig*: vocant *codd.*

[2] e proximis (*sc. auctoribus*) FLdh: et in proximis B *Sillig.*

[3] et Laconicos (-is L) in Taygeto (Tapgeto F, Tageto L) monte FL *edd. vett.*: montibus et in Taygeto B: et in Taygeto monte *Mayhoff.*

[a] These were malachite crystals from the copper-mines of Demonesus (mod. Chalke), one of the Prinkipo Islands in the Sea of Marmara, not far from Skutari (Chalcedon). *Cf.* Theophrastus, *de Lap.* 25–26.

[b] Possibly panels of green porphyry.

[c] Probably small pieces of green porphyry, which Pliny elsewhere (XXXVI. 55) calls *marmor Lacedaemonium.*

[d] Probably green jasper.

[e] Sometimes identified as the amazon stone, but perhaps an inferior green turquoise.

mountain known as Smaragdites, or Emerald Mountain, near Chalcedon, on which they used to be gathered.[a] Juba states that a ' smaragdus ' known as ' chlora,' or ' green stone,' is used as an inlay in decorating houses in Arabia;[b] and likewise the stone which the Egyptians call ' alabastrites.' Several of XXXVI. 60.
our most recent authorities mention not only Laconian ' smaragdi,'[c] which are dug on Mount Taygetus and resemble the Median variety, but also others that are found in Sicily.[d]

XIX. Among the ' smaragdi ' we include also a gem that comes from Persia known as the ' tanos,' which is of an ugly shade of green and is full of flaws within,[e] and another from Cyprus, the ' chalcosmaragdus,' or ' copper smaragdus,' which is clouded by veins resembling copper.[f] Theophrastus records *de Lap.* 24.
that in Egyptian records are to be found statements to the effect that to one of the kings a king of Babylon once sent as a gift a ' smaragdus ' measuring four cubits in length and three in breadth;[g] and that there existed in Egypt in a temple of Jupiter an obelisk made of four ' smaragdi ' and measuring forty cubits in height and four cubits in breadth at one extremity and two at the other.[h] He states, more- *de Lap.* 25.
over, that at the time when he was writing there existed in the temple of Hercules at Tyre a large

[f] A variety of malachite.

[g] Possibly a block of malachite.

[h] The text in Theophrastus is corrupt. Obelisks are monoliths and were usually erected in pairs, so that it is virtually certain that Theophrastus was describing not *one* obelisk made of *four* ' smaragdi,' but *four* obelisks each made of a *single* ' smaragdus,' which may have been green basalt or green schist. The temple was that of Amon at Thebes.

nisi potius pseudosmaragdus sit, nam et hoc genus reperiri, et in Cypro inventum ex dimidia parte smaragdum, ex dimidia iaspidem, nondum umore in totum transfigurato. Apion cognominatus Plistonices paulo ante scriptum reliquit esse etiam nunc in labyrintho Aegypti colosseum Serapim e smaragdo novem cubitorum.

76 XX. Eandem multis naturam aut certe similem habere berulli videntur. India eos gignit, raro alibi repertos. poliuntur omnes sexangula figura artificum ingeniis, quoniam hebes unitate surda color repercussu angulorum excitetur. aliter politi non habent fulgorem. probatissimi ex iis sunt qui viriditatem maris puri imitantur, proximi qui vocantur chrysoberulli, paulo pallidiores, sed in
77 aureum colorem exeunte[1] fulgore. vicinum huic genus est, sed pallidius et a quibusdam proprii generis existimatum vocatumque chrysoprasum. quarto loco

[1] exeunte dh *cod. Poll.*: exeuntes B.

---

[a] *Cf.* Herodotus II. 44. Possibly malachite or green jasper (How and Wells), but Theophrastus may have supposed it to be green porphyry. The temple was that of Melkart.

[b] Theophrastus seems to have thought that gemstones were formed of liquid matter impregnated with earthy particles held in solution. See Introduction, p. xv. As for the stone, the uncertainties of ancient nomenclature make identification impossible. It may, for example, have been a malachite crystal joined to a piece of ordinary malachite (King), or a green jasper joined to a dull grey jasper, or a plasma joined to a dull chalcedony.

[c] A scholar of Alexandria, who later lived in Rome under

square pillar of 'smaragdus,'[a] unless this was rather to be regarded as a 'false smaragdus'; for, according to him, this is another variety that is found. He mentions also that there was once discovered in Cyprus a stone of which half was a 'smaragdus' and half an 'iaspis,' because the liquid matter had not yet been completely transformed.[b] Apion, surnamed Plistonices, or 'the Cantankerous,'[c] has lately left on record the statement that there still exists in the Egyptian labyrinth a large statue of Serapis, nine cubits high, made of 'smaragdus.'

de Lap. 27.

XXXVI. 84–89.

Beryls.

XX. Many people consider the nature of beryls to be similar to, if not identical with, that of emeralds.[d] Beryls are produced in India and are rarely found elsewhere. All of them are cut by skilled craftsmen to a smooth hexagonal shape,[e] since their colour, which is deadened by the dullness of an unbroken surface, is enhanced by the reflection from the facets. If they are cut in any other way they lack brilliance. The most highly esteemed beryls are those that reproduce the pure green of the sea, while next in value are the so-called 'chrysoberyls.' These are slightly paler, but have a vivid colour approaching that of gold. A variety closely akin to these, but still a little paler and by some regarded as a special kind is the so-called 'chrysoprasus.'[f] Fourth in

Aquamarines. Greenish-yellow beryls.

Tiberius and Claudius. He wrote on Egypt (see Josephus, *contra Apionem*).

[d] This is correct. Emeralds are deep-green beryls.

[e] Beryl is *formed* as hexagonal crystals.

[f] Not the modern chrysoprase, which is apple-green chalcedony, and perhaps Theophrastus' ὄμφαξ. Possibly the corundum Cat's-eye, a variety of the modern chrysoberyl, which, however, is not a beryl.

numerantur hyacinthizontes, quinto[1] quos aëroidis vocant, postea cerini ac deinde oleagini, hoc est colore olei, postremi crystallo similes. hi fere capillamenta habent sordesque, alioqui evanidi, quae
78 sunt omnia vitia. Indi mire gaudent longitudine eorum solosque gemmarum esse praedicant qui carere auro malint; ob id perforatos elephantorum saetis subligant. convenit non oportere perforari quorum sit absoluta bonitas, umbilicis tantum ex auro capita conprehendentibus. ideo cylindros ex iis malunt facere quam gemmas, quoniam est summa
79 commendatio in longitudine. quidam et angulosos statim putant nasci et perforatos gratiores fieri medulla candoris exempta additoque auri repercussu aut omnino contracta[2] perspicuitatis[3] crassitudine. vitia praeter iam dicta eadem fere quae in smaragdis et pterygia. in nostro orbe aliquando circa Pontum inveniri putantur. Indi et alias quidem gemmas crystallum tinguendo adulterare invenerunt, sed praecipue berullos.

[1] quinto quos h *cod. Poll.*: quintos B.
[2] contracta *ego*: constrata B: castigata dh: castrata *Ianus, Mayhoff*.
[3] perspicuitatis *codd.*: perspicuitati *Mayhoff*.

---

[a] Colourless beryls.
[b] Aquamarines often terminate in a number of inclined faces; and it was presumably this convex 'head' that was masked by the gold cap.
[c] See p. 225, n. [e].
[d] Or, reading *castigata* (with dh), 'corrected.'
[e] They no doubt came from the Urals. *Cf.* § 65, and p. 214, n. [c].

order are reckoned the 'hyacinthizontes,' or 'sapphire-blue beryls,' and fifth the so-called 'aëroides,' or 'sky-blue' variety. After these come the 'waxy' and then the 'oily' beryls, that is, beryls coloured like olive oil. Finally, there are those that resemble rock-crystal.[a] These beryls generally contain filaments and impurities, and besides are faint in colour; and all these features alike are defects. The Indians are extraordinarily fond of elongated beryls and claim that they are the only precious stones that are preferably left without a gold setting. Consequently, they pierce them and string them on elephants' bristles. They are all agreed that a stone of perfect quality should not be pierced, and in this case they merely enclose the head of the stone in a convex gold cap.[b] They prefer to shape beryls into long prisms rather than into gems simply because length is their most attractive feature. Some people are of the opinion that they are formed from the very start as prisms,[c] and also that their appearance is improved by perforation, when a white cloudy core is removed and there is, in addition, the reflection from the gold or, in any case, the thickness of the material through which the light must penetrate is reduced.[d]
Besides those already mentioned, beryls show the § 77.
same defects as 'smaragdi,' and also spots like whitlows. In our part of the world beryls, it is thought, are sometimes found in the neighbourhood of the Black Sea.[e] The Indians have found a way of counterfeiting various precious stones, and beryls in particular, by staining rock-crystal.[f]

[f] There were good forgeries of beryls (E. H. Warmington, *The Commerce between the Roman Empire and India*, p. 251).

80 XXI. Minimum iidemque plurimum ab iis differunt opali, smaragdis tantum cedentes. India sola et horum mater, atque [1] ut pretiosissimarum gloria compositi [2] gemmarum maxime inenarrabilem difficultatem adferunt.[3] est in his carbunculi tenuior ignis, est amethysti fulgens purpura, est smaragdi virens mare, cuncta pariter incredibili mixtura lucentia.
81 alii summam fulgoris Armenio colori pigmentorum aequari [4] credunt, alii sulpuris ardentis flammae aut ignis oleo accensi. magnitudo abellanam nucem aequat. insignit [5] etiam apud nos historia,[6] siquidem exstat hodieque huius generis gemma, propter quam ab Antonio proscriptus est Nonius senator, filius Strumae Noni eius, quem Catullus poeta in sella curuli visum indigne tulit, avusque Servili Noniani, quem consulem vidimus. ille proscriptus fugiens hunc e fortunis omnibus anulum abstulit secum.
82 certum est sestertio vicies tum aestimatum, sed mira Antoni feritas atque luxuria propter gemmam proscribentis, nec minus Noni contumacia proscriptionem suam amantis, cum etiam ferae abrosa parte corporis, propter quam periclitari se sciant, et relicta redimere se credantur.

[1] atque *aliquot codd., edd. vett.*: est B: est. qui *Mayhoff.*
[2] compositi Fdha: compos. hi B *Sillig, qui sic dist.*
[3] adferunt B: dederunt Fdh.
[4] aequari *Mayhoff*: aequare B: aequavere *ceteri codd.*: aequare se *coni. Mayhoff.*
[5] insignit *ego*: insignis B *Mayhoff*: insigni dh.
[6] apud nos historia dh: apud historias B.

[a] It has been doubted whether India produces opals of good quality. In 1943 it was reported that gem opals were being mined in Kashmir (S. H. Ball, *A Roman Book on Precious Stones*, p. 270).
[b] Lit. 'outlawry,' but Pliny means the ring.

XXI. Beryls differ very little, and also very considerably, from opals, stones which yield precedence only to the 'smaragdus.' India, likewise, is the sole producer of these stones,[a] and combining, as they do, the brilliant qualities of the most valuable gems, they above all others defy description. They display the more subtle fires of the 'carbunculus,' the flashing purple of the amethyst and the sea-green tint of the 'smaragdus,' all combined together in incredible brilliance. For some people the vivid colours resemble in their general effect the pigment known as azurite; for others, the flames from burning sulphur or from a fire that has been kindled with olive oil. The size of the stone is that of a hazel nut. Even among us history makes it famous, since there still exists even to-day a precious stone of this variety which caused Antony to outlaw a senator, Nonius, the son of the Nonius Struma who made the poet Catullus so indignant when he saw him seated in the magistrate's chair, and the grandfather of Servilius Nonianus, who was consul in my time. This Nonius, when outlawed, fled, taking with him this ring alone of all his many possessions. There is no doubt that at that time the value of the ring was 2,000,000 sesterces; but how amazing was Antony's savagery and extravagant caprice in outlawing a man for the sake of a gemstone, and, equally, how extraordinary was the obstinacy of Nonius in clinging to his 'doom,'[b] when even wild creatures[c] are believed to buy their safety by biting off the member which, as they know, endangers their lives, and leaving it behind for their pursuers!

Opals. — §§ 92–97. — XXXV. 30. — Cat. 52, 2. — A.D. 35.

[c] Beavers (VIII. 109).

83 XXII. Vitia opalis sunt, si color in florem herbae quae vocatur heliotropium exeat aut in crystallum aut grandinem, si sal interveniat aut scabritia aut puncta oculis occursantia. nullos magis fraus indiscreta similitudine vitro adulterat. experimentum in sole tantum: falsis enim contra radios libratis digito ac pollice unus atque idem tralucet colos in se consumptus; veri fulgor subinde variatur et modo ex hoc plus, modo ex illo spargit, fulgorque lucis in
84 digitos funditur. hanc gemmam propter eximiam gratiam plerique appellavere paederota. qui privatum genus eius faciunt, sangenon ab Indis vocari tradunt. nasci dicitur in Aegypto et in Arabia, et vilissima in Ponto, item in Galatia ac Thaso et Cypro. qui praecellit ex his, opali quidem gratiam habet, sed mollius nitet, raro non scaber. summa illi coloris ex aëre et purpura constat, viriditas smaragdi deest. melior ille cuius fulgor vini colore fuscatur quam qui diluitur aquae.

85 XXIII. Hactenus de principatu convenit mulierum maxime senatusconsulto.[1] minus certa sunt de quibus

[1] senatusconsulto *aliquot codd.*: iudicio B.

[a] Pliny seems uncertain whether this 'paederos' was identical with the opal or not. His description of the stone in § 129 would apply to an opal. For him the question was complicated by the fact that there was an amethyst called 'paederos' (§ 123). The last sentence of § 84 and the list of places given in §§ 84 and 130 may in Pliny's source have referred to the amethyst. The inclusion of Egypt points to this; and most of the names recur in the chapter on amethysts (§ 121). Moreover in § 80 Pliny states that opals come only from India.

XXII. The defects of the opal are a colour tending towards that of the flower of the plant called heliotrope, or of rock-crystal or hail, as well as the occurrence of salt-like specks or rough places or dots that distract the eye. There is no stone which is harder to distinguish from the original when it is counterfeited in glass by a cunning craftsman. The only test is by sunlight. When a false opal is held steadily between the thumb and finger against the rays of the sun there shines through the stone one unchanging colour which is spent at its source, whereas the radiance of the genuine stone continually changes and at different times scatters its colours more intensely from different parts of the stone, shedding a bright light on the fingers where it is held. Owing to its exceptional beauty, this stone is commonly known by the Greek term 'paederos,' or 'Favourite,' § 129.
but those who regard the 'paederos' as a separate variety[a] say that the Indian name for it is 'sangenon.' The 'paederos' is said to be found in Egypt and Arabia, in Pontus, where the quality is very poor, and also in Galatia, Thasos and Cyprus. Exceptional specimens of these latter stones have the charm of an opal, but they shine more softly and rarely lack roughness. The dominant colour of the 'paederos' is a mixture of sky-blue and purple, and the green of the 'smaragdus' is absent. Those in which the brilliance is darkened by the colour of wine are superior to those in which it is diluted with a watery tint.

XXIII. Up to this point there is agreement as to which stones are supreme, the question having been largely settled by a decree of our Women-councillors

et viri iudicant; singulorum enim libido pretia singulis facit praecipueque aemulatio, velut cum Claudius Caesar smaragdos induebat vel sardonyches. primus autem Romanorum sardonyche usus est Africanus prior, ut tradit Demostratus, et inde Romanis gemmae huius auctoritas. quam ob rem et proximum ei dabimus locum.

86 Sardonyches olim, sicut ex ipso nomine apparet, intellegebantur in candore [1] sarda, hoc est veluti carne ungui [2] hominis inposita,[3] et utroque tralucido. talesque esse Indicas tradunt Ismenias, Demostratus, Zenothemis, Sotacus, hi quidem duo reliquas omnes quae non traluceant caecas appellantes.[4]

87 quae nunc abstulere nomen, nullo sardarum vestigio Indicarum,[5] Arabicae sunt, coeperuntque pluribus hae gemmae coloribus intellegi, radice nigra aut caeruleum imitante et ungue minium, redimitum

[1] in candore sarda B: candore in sarda *Mayhoff, coll.* Isid. XVI.8.4.

[2] carne ungui B: carnibus ungue dh.

[3] imposita B: imposito dh.

[4] appellantes. dh *Mayhoff, qui sic dist.*: appellant B *Sillig qui hic comma, post* nomen *punctum ponit.*

[5] Indicarum B: *om. ceteri codd.*

---

[a] From *sarda* (σάρδιον) and ὄνυξ, a finger-nail. The term *sarda* includes both carnelian (clear red chalcedony) and sard (reddish-brown, brown, and yellow chalcedony). In the present context the word clearly means carnelian. Thus sardonyx is strictly a banded chalcedony containing at least one layer of carnelian. Owing to the popularity of the genuine sardonyx, the word had come to be applied, no doubt

of State. There is less certainty regarding the stones about which men too pass judgement. In the case of men, it is an individual's caprice that sets a value upon an individual stone, and, above all, the rivalry that ensues. A case in point is that of the Emperor Claudius, when he took to wearing a 'smaragdus' or a sardonyx. But according to Demostratus, the first Roman to adopt a sardonyx § 34.
was the elder Africanus, and hence arose the esteem 236–184 B.C.
which this gemstone enjoys at Rome. And so it is to this stone that I shall award the next place after the opal.

Formerly, as is clear from the very name, sardonyx[a] *Sardonyx.*
meant a stone with a layer of carnelian resting on a layer of white, that is, like flesh superimposed on a human finger-nail, both parts of the stone being translucent. Such is the character of the Indian sardonyx according to Ismenias, Demostratus, Zenothemis and Sotacus. The last two writers call such other varieties of the stone as are opaque 'blind sardonyx.' Those stones that have now usurped the name although they lack all trace of the carnelian of the Indian stones[b] come from Arabia;[c] and the sardonyx has come to be recognized in the guise of several colours, the base being black or else having the colour of azurite, while the 'nail' above is

by the dealers, to other varieties of onyx containing a layer of red jasper (*imitante . . . minium*, § 87) or of sard (*melleae aut faeculentae*, § 89).

[b] Retaining with B *Indicarum* (sc. *sardonychum*).

[c] These too may have been Indian, like many stones attributed to Arabia. Onyx from Sanaa in the Yemen was, however, known in the Middle Ages and has been used in recent times (S. H. Ball, *op. cit.*, p. 273).

candido pingui, nec sine quadam spe purpurae candore in minium transeunte. has Indis non habitas in honore Zenothemis scribit, tantae alias
88 magnitudinis ut inde capulos factitarent—etenim constat ibi torrentibus detegi—placuisse in nostro orbe initio, quoniam solae prope gemmarum scalptae ceram non auferrent.[1] persuasimus deinde Indis ut ipsi quoque iis gauderent. utitur perforatis vulgus in collo; et hoc nunc est Indicarum argumentum. Arabicae excellunt candore, circulo praelucido atque non gracili neque in recessu gemmae aut in deiectu renidente,[2] sed in ipsis umbonibus nitente,
89 praeterea substrato nigerrimi coloris. hoc in Indicis caeruleum aut corneum invenitur. item [3] circuli albi quaedam in iis caelestis arcus anhelatio est, superficies vero locustarum maris, crustis rubentibus. nam melleae aut faeculentae—hoc enim nomen est vitio—inprobantur, aut si zona alba fundat se, non colligat, simili modo si ex alio colore admittat in se aliquid enormiter. nihil in sua sede interpellari alieno placet. sunt et Armeniae, cetera probandae, sed pallida zona.

[1] auferrent dh: auferunt B.
[2] renidente B[1]L: renitente B[2] *edd. vett.*
[3] item *cod.* a: iam dh.

[a] Pliny implies that it was too easily found to be regarded as valuable.

coloured vermilion and is banded with a thick white line, not without a suggestion of purple where the white shades into vermilion. Zenothemis writes that § 34.
the sardonyx was not held in high regard by the Indians, though it might be actually large enough to be commonly made into sword hilts. Indeed, as is generally known, in India the stone is exposed to view by the mountain streams.[a] He states that in our part of the world, however, the sardonyx was popular from the beginning because it was almost the only gemstone which, when engraved as a signet, did not carry away the sealing wax with it. Later we persuaded the Indians to share our appreciation of it. There the common folk wear it pierced on a necklace; and this perforation is now a proof of Indian origin. The Arabian stones are remarkable for their whiteness, the band being brilliant and quite thick: it does not glimmer in the depths of the stone or on its sloping side, but shines on the convex surface of the gem and is, moreover, set off by a lower layer of the deepest black. In the Indian stones we find that this layer has the colour of azure or horn. Moreover, their white band can have a kind of iridescent shimmer, while the surface is red like the shell of a crawfish. Incidentally, if the stones are coloured like honey or wine lees (the latter term in itself implying a defect) they are condemned; and again, also, if the white band is blurred instead of being defined, and similarly if it contains an intrusive patch of some other colour. For no colour must be broken by another in its own layer. There is also an Armenian sardonyx which is acceptable in every respect apart from the faintness of its (white) band.

90 XXIV. Exponenda est et onychis ipsius natura propter nominis societatem. hoc aliubi lapidis, hic gemmae vocabulum est.[1] Sudines dicit in gemma esse candorem unguis humani similitudine, item chrysolithi colorem et sardae et iaspidis, Zenothemis Indicam onychem plures habere varietates, igneam, nigram, corneam, cingentibus candidis venis oculi modo, intervenientibus quarundam et obliquis venis. Sotacus et Arabicam tradit onychem distare, quod Indica igniculos habeat albis cingentibus zonis singulis pluribusve aliter quam in sardonyche Indica; illic enim momentum esse, hic circulum; Arabicas
91 onychas nigras inveniri candidis zonis; Satyrus carnosas esse Indicas, parte carbunculi, parte chrysolithi et amethysti, totumque id genus abdicat;[2] veram autem onychem plurimas variasque cum lacteis habere venas, omnium in transitu colore inenarrabili et in unum redeunte concentum suavitate grata.

Nec sarda differenda[3] est, huic gemmae dividua

[1] hoc aliubi lapidis, hic gemmae vocabulum est *Sillig, Mayhoff ex codice* B, *in quo sequitur quasi interpolatio* sive partis eius qua ad unguis similitudinem refertur. de hoc ita scriptum est. *quae verba om. Sillig, Mayhoff.* hoc in gemma transiit a lapide Carmaniae dh.

[2] abdicat dh *cod. Poll.*: abdicavit B.

[3] differenda *om.* B *Sillig.*

[a] *I.e.*, a stone found in bulk, namely onyx marble (XXXVI. 59).

[b] The term may here apply both to onyx and to banded agate, which differs from onyx only in the irregular arrangement of its bands.

XXIV. I must describe too the character of the onyx proper, which shares its name with the sardonyx. Elsewhere, this name is given to a stone,[a] but here it is that of a gem.[b] Sudines states that in onyx one finds a white band resembling a human finger-nail, as well as the colour of the 'chrysolith,'[c] the sard and the 'iaspis,'[d] while Zenothemis mentions that the Indian onyx has several different colours, fiery red, black and that of horn, surrounded by a white layer as in an eye, and in some cases traversed by a slanting layer. Sotacus records also an Arabian onyx which differs from the Indian in that the latter displays a small fiery red layer surrounded by one or more white bands (the arrangement being unlike that of the Indian sardonyx, where the top red layer is a circle, and not, as in this instance, a dot).[e] On the other hand, the Arabian onyx, according to him, is found to be black with white bands. Satyrus states that there is an Indian onyx that is flesh-coloured, with a part of it resembling the 'carbunculus,' and a part, the 'chrysolith'[f] and the amethyst. This kind he wholly rejects as spurious, asserting that a genuine onyx has several bands of different colours combined with others that are milk-white, the colours as the bands shade into each other being quite indescribable as they are reduced to a harmonious and delightfully agreeable unity.

Onyx.

We must not, however, postpone too long our discussion of the sard, which is similarly a separate § 105.

[c] Yellow sapphire (§ 126).

[d] Here probably green chalcedony. See § 115.

[e] The stone with a dot may be eye-agate.

[f] See n. [c], above.

ex eodem et ipsa nomine, obiterque omnium ardentium gemmarum indicanda natura.

92 XXV. Principatum habent carbunculi a similitudine ignium appellati, cum ipsi non sentiant ignes, a quibusdam ob hoc acaustoe appellati. horum genera Indici et Garamantici, quos et Carchedonios vocavere propter opulentiam Carthaginis Magnae. adiciunt Aethiopicos et Alabandicos in Orthosia Cariae nascentes, sed qui perficiantur Alabandis. praeterea in omni genere masculi appellantur
93 acriores et feminae languidius refulgentes. in masculis quoque observant liquidiores aut flammae nigrioris et quosdam ex alto lucidos ac magis ceteris in sole flagrantes, optimos vero amethystizontas, hoc est quorum extremus igniculus in amethysti violam exeat, proximos illis, quos vocant syrtitas, pinnato

[a] Lit. 'itself too being divisible from the same name as this gem.' *Huic gemmae* is the onyx, which, like the sard, is a component of the term 'sardonyx.'

[b] *I.e.*, their name implies that they resemble small pieces of burning charcoal.

[c] Pliny's *carbunculi* include rubies, red garnet (pyrope and almandine), and possibly red spinel. His Indian *carbunculi* probably include all three. His remark that *carbunculi* are unaffected by fire applies generally only to rubies.

[d] *I.e.*, Carthage in Africa, as opposed to Nova Carthago in Spain. The source of the Carthaginian carbuncles remains a mystery. The Garamantes of the Fezzan Oasis were only middlemen. See V. 34, 35–37, where the evidence, such as it is, indicates a source to the S.W. of the Fezzan, perhaps the Hoggar Mountains. No North African garnets are now known.

[e] Like so many 'Ethiopian' stones, these *carbunculi* were no doubt imported from India.

component of the name it shares with the onyx;[a] and as we make our way to this topic, we must describe the properties of all the other fiery red gemstones.

Red stones. Carbunculi.

XXV. The first rank among these is held by 'carbunculi,' so-called because of their fiery appearance,[b] although they are not affected by fire and are therefore sometimes known as 'acaustoe,' or 'incombustible' stones.[c] Two kinds of 'carbunculi' are the Indian and the Garamantic: the latter was called in Greek the Carthaginian because it was associated with the wealth of Great Carthage.[d] To these varieties are added the Ethiopian[e] and that of Alabanda, the latter being found, it is said, at Orthosia in Caria, but treated at Alabanda.[f] Furthermore, in each variety there are so-called 'male' and 'female' stones, of which the former are the more brilliant, while the latter have a weaker lustre.[g] Among the male stones, moreover, are to be observed some that are clearer than usual or of an unusually dark red glare, and some that shine from deep beneath their surface and blaze with exceptional brilliance in sunlight, while the best are the 'amethyst-coloured stones,'[h] namely those in which the fiery red shade passes at the edge into amethyst-violet, and the next best, known as 'Syrtitae,' or

From Alabanda are derived the terms 'almandine,' 'almandite.' Alabanda and Orthosia are roughly 40 and 60 miles E. of Miletus respectively. No garnets have been reported from this district in modern times, but the geological conditions are said to be favourable.

[g] As in the case of other precious stones, the 'male' is generally the more brilliant, and also the darker.

[h] Violet almandine, sometimes known as Syriam garnet, Syriam being a town in S. Burma.

fulgore radiantes. inveniri autem ubi maxime sit
94 solis repercussus. Satyrus Indicos non esse claros dicit ac plerumque sordidos ac semper fulgoris retorridi, Aethiopicos pingues lucemque non fundentes convoluto igne flagrare. Callistratus fulgorem carbunculi debere candidum esse, ut positus extremo visu nubilantes [1] attollat exardescente fulgore—ob id plerique hunc carbunculum candidum vocavere, eum
95 qui languidius lucet lignyzontem [2];—Carchedonios multo minores esse, Indicos etiam in [3] sextarii unius mensuram [4] cavari. Archelaus Carchedonios nigrioris aspectus esse, sed igni vel sole et inclinatione acrius quam ceteros excitari; eosdem obumbrante tecto purpureos videri, sub caelo flammeos, contra radios solis scintillare, ceras signantibus his liquescere,
96 quamvis in opaco. multi Indicos Carchedoniis candidiores esse et e diverso inclinatione hebetari scripsere, etiamnum in Carchedoniis maribus stellam intus ardere, feminas fulgorem universum fundere extra se, Alabandicos nigriores ceteris esse scabros-

[1] nubilantes (-is *Sillig*) attollat B *Sillig*: nubilante sit, si attollatur *Mayhoff*.
[2] lignyzontem *Sillig*: lignyizontem *Ianus, fortasse recte*: lignizonte B.
[3] etiam in Bdh *Sillig*: etiam minus *cod.* a, *cod. Poll.*: etiam *Mayhoff*.
[4] mensuram d(?) *Sillig*: mensura Ba *cod. Poll., Mayhoff*.

[a] Incipient cleavage cracks ('feathers') may produce a pearly lustre. These *Syrtitae* differ from those of § 182.
[b] Some garnets are sufficiently fibrous to show such a 'star,' when viewed in certain directions.

'Stones of Syrtis,' have a bright feathery lustre.[a] All these stones are said to reveal themselves in ground where sunlight is reflected most powerfully. Satyrus asserts that Indian 'carbunculi' lack brilliance and look generally flawed, with a 'parched' lustre; and that the Ethiopian stones look greasy and shed no lustre at all, but burn with a fire that is compressed within them. Callistratus holds that a 'carbunculus' ought to cast a brilliant, colourless refulgence, so that when placed on a surface it enhances the lustre of other stones that are clouded at the edges, thanks to its own glowing brilliance. Hence many people call such a stone the white 'carbunculus,' and the kind that shines more faintly the 'lignyzon,' or 'murky' stone. Callistratus adds that Carthaginian 'carbunculi' are much smaller than others, and that the Indian stones can be hollowed into vessels holding as much as a pint.
Archelaus writes that the Carthaginian stones have § 46.
a somewhat swarthy appearance, but light up more intensely than the rest when they are viewed by firelight or sunlight, and at an angle. He mentions also that they appear purple indoors in shadow, and flame-red in the open air; that they sparkle when they are held against the sun, and that, when they are used as signets, they melt the wax, even in a very dark place. Many writers state that the Indian stones are brighter than the Carthaginian, and that conversely they become dull when viewed at an angle. They add that the male Carthaginian stones have a blazing star inside them,[b] while the female stones shed all their radiance externally; and that the 'carbunculi' of Alabanda are darker than the

que. et circa Miletum nascuntur in terra coloris
97 eiusdem, ignem minime sentientes. Theophrastus auctor est et in Orchomeno Arcadiae inveniri et in Chio, illos nigriores, e quibus et specula fieri; esse et Troezenios varios intervenientibus maculis albis, item Corinthios sed pallidiore candido;[1] a Massilia quoque inportari. Bocchus et in Olisiponensi erui scripsit, magno labore ob argillam soli adusti.
98 XXVI. Nec est aliud difficilius quam discernere haec genera; tanta est in iis occasio artis, subditis per quae tralucere cogantur. aiunt hebetiores, in aceto maceratos XIIII diebus, nitescere totidem mensibus durante fulgore. adulterantur vitro simillime, sed cote deprehenduntur, sicut aliae gemmae; fictis enim mollior materia fragilisque est. centrosas[2] cote deprehendunt et pondere, quod minus est in vitreis, aliquando et pusulis argenti modo relucentibus.
99 XXVII. Est et anthracitis appellata, in Thesprotia

[1] pallidiore candido *ego*: pallidiores candido B: pallidiore candidos Ldh: pallidiores e candido *Mayhoff*.
[2] centrosas B: centrosa dh.

---

[a] Presumably another description of the garnets of Alabanda. All garnets are in fact fusible except for uvarovite, which is green and has no relevance here. The sentence could be rendered: 'there occur stones in earth of the same colour.' But this sentence, as well as the next, is probably derived from Theophrastus, *de Lapidibus*, in this instance, § 19, οὐ καίεται δὲ ὁ περὶ Μίλητον (sc. ἄνθραξ). With *eiusdem coloris* understand *lapides*.

[b] There are no garnets in any of the places mentioned. The stones may have been variegated marbles.

[c] *Pallidiore* stands for χλωροειδέστερον, the meaning of which in this instance is 'yellowish,' not 'paler.' Whether Pliny understood this is doubtful.

[d] Perhaps pyrope from Bohemia or some other Celtic source.

rest, and rough. Around Miletus also, the earth produces stones of the same colour, which are not at all affected by fire.[a] Theophrastus assures us that 'carbunculi' are found both at Orchomenos in Arcadia and in Chios, the former, of which mirrors are made, being the darker. According to him, there are variegated stones, interspersed with white spots, from Troezen, and likewise from Corinth,[b] although the white in these Corinthian stones is yellowish.[c] He mentions that 'carbunculi' are imported also from Marseilles.[d] Bocchus writes that they are dug up too in the neighbourhood of Lisbon, but only with great difficulty, because the soil, which is clay, is baked hard by the sun.

de Lap. 33.

de Lap. 18; 34.

XXVI. Nothing is harder than the attempt to distinguish the varieties of this stone, so great is the scope that they afford for the exercise of cunning, when craftsmen force the opaque stones to become translucent by placing foil beneath them. The duller stones, it is said, when steeped in vinegar for fourteen days shine with a lustre that persists for as many months. 'Carbunculi' are counterfeited very realistically in glass, but, as with other gems, the false ones can be detected on a grindstone, for their substance is softer and brittle. Artificial stones containing cores[e] are detected by using grindstones and scales, stones made of glass paste being less heavy. On occasion, moreover, they contain small globules which shine like silver.

XXVII. There is also a stone called 'anthracitis,' *Anthracitis.*

[e] Reading *centrosas* (sc. *gemmas*). Possibly to heighten the deception, some glass garnets were manufactured with internal flaws which would simulate characteristic inclusions of quartz.

fossilis, carbonibus similis. falsum arbitror quod et in Liguria nasci prodiderunt, nisi forte tunc nascebantur. esse in iis et praecinctas candida vena tradunt. harum igneus color ut superiorum, sed peculiare quod tactu velut intermortuae extinguntur, contra aquis perfusae exardescunt.

100 XXVIII. Cognata est et sandastros, quam aliqui pro natura et [1] Garamanticam vocant. nascitur in Indis loco eiusdem nominis. gignitur et in Arabia ad meridiem versa. commendatio summa quod veluti in tralucido ignis optentus stellantibus fulget intus aureis guttis, semper in corpore, numquam in cute. accedit et religio narrata siderum cognatione, quoniam fere Pliadum Hyadumque dispositione ac numero stellantur, ob id Chaldaeis in caerimoniis
101 habitae. et hic mares austeritas distinguat [2] et quidam vigor adposita tinguens; Indicae quidem etiam hebetare visus dicuntur. blandior feminis

[1] pro natura et (ut B) *ante* quam B, *transp. ego*: *om.* dh *cod. Poll.*, *Sillig*: proxima natura eius *Mayhoff.*
[2] distinguat B: distinguit dh.

---

[a] This chapter is probably a garbled description of lignite, which elsewhere is said to occur both in Thesprotia, *i.e.*, S.W. Epirus (Antigonus of Carystus, *Hist. Mir.*, 120) and in Liguria (Theophrastus, *de Lap.* 16). The final remark is significant: ancient writers mention that moisture causes the spontaneous combustion of lignite.

[b] Possibly aventurine quartz, a reddish-brown stone containing numerous inclusions of mica which resemble specks of gold, but perhaps opal-matrix.

[c] The sentence is corrupt. The reading adopted would mean that the stone was thought to resemble the Garamantic (Carthaginian) garnet (§ 92).

which is dug up in Thesprotia and resembles charcoal. Statements that it is found in Liguria I consider to be false, unless it is a fact that it was found there when the statements were made. Among these stones there are said to be some that are surrounded by a white vein. The ' anthracitis ' has the fiery colour of the stones previously mentioned, but it possesses one peculiar property: when it is touched its glow dies away and disappears, but when, on the other hand, it is soaked with water it blazes forth again.[a]

XXVIII. A stone that is closely akin to ' carbunculi ' is the ' sandastros,'[b] sometimes known also as the Garamantic stone in virtue of its character.[c] It occurs in a part of India that bears the same name,[d] and is found also in Southern Arabia. Its chief merit is that its fiery brilliance, displayed, as it were, in a transparent casing, glitters with golden particles that shine like stars within the stone, and always inside its structure and never upon its surface. Furthermore, there are religious associations attached to these stones, and we are told of their affinity with the stars, which exists because the starry particles with which they are embellished generally conform in their numbers and arrangement to the constellations of the Pleiades and Hyades. For this reason, they are regarded by astrologers as ritual objects. Here too, the male stones may be distinguished by their deep colour and by a certain vitality, which imparts a tint to objects placed close to them. The Indian stones, it is said, even weaken the sight. The fire of the female stones is more mellow, and glows

Sandastros.

[d] *I.e.*, Sandastros: *cf.* § 102, *illam quoque et loci nomen custodientem.*

flamma, allucens magis quam accendens. sunt qui praeferant Arabicas Indicis fumidaeque chrysolitho similes illas dicant. Ismenias negat poliri sandastros propter teneritatem, et ob id magno venire. sunt qui has sandrisitas vocent. inter omnes constat, quantum numero stellarum accedat, tantum et pretio
102 accedere. adfert aliquando errorem similitudo nominis sandaresi. Nicander sandaserion vocat, alii sandareson,[1] quidam vero hanc sandastrum, illam sandaresum, in India nascentem illam quoque [2] et loci nomen custodientem, mali colore aut olei viridis, omnibus inprobatam.

103 XXIX. Ex eodem genere ardentium est lychnis appellata a lucernarum accensu,[3] tum praecipuae gratiae. nascitur circa Orthosiam totaque Caria ac vicinis locis, sed probatissima in Indis. quidam remissiorem carbunculum esse dixerunt, secundam bonitate quae similis esset Iovis appellatis floribus. et alias invenio differentias: unam quae purpura [4] radiet, alteram quae cocco; [5] has sole excalfactas aut

[1] sandareson dh *Ianus*: sandaseron *Hermolaus Barbarus*.
[2] illam quoque] ipsam quoque *coni. Mayhoff*.
[3] accensu dh: assensu B[2] *Sillig*: adsensu *Mayhoff*.
[4] purpura Ldh *edd. vett.*: purpuram B *Mayhoff*.
[5] cocco Ldh *edd. vett.*: coccum B *Mayhoff*.

---

[a] Perhaps smoky-quartz.
[b] *Illam* referring to two different stones is awkward, but the meaning seems obvious.
[c] Possibly plasma.
[d] *Lucernarum accensus* is a rendering of *λύχνων ἁφαί* ('lighting-up time'). This is much less unnatural than *lucernarum assensus* (' conspiring with lamps '?).

rather than kindles. Some prefer the Arabian stones to the Indian, and compare the former to the smoky ' chrysolithus.'[a] Ismenias declares that because of its softness the ' sandastros ' cannot be polished, and so fails to fetch a high price. Some people call the stone ' sandrisites.' What is universally agreed is that, the larger the number of starry particles, the higher the price. Sometimes misunderstanding is caused by the similarity of the term ' sandaresus,' applied to a stone which Nicander calls ' sandaserion ' and others ' sandaresos,' although there are certain writers who actually call this stone ' sandastros,' and our former stone ' sandaresus.' This latter stone [b] likewise is found in India and preserves the name of its place of origin. Its colour is that of a green apple or green oil, and it is generally despised.[c]

XXIX. To the same class of fiery red stones belongs the ' lychnis,' so called from the kindling of lamps, because at that time it is exceptionally beautiful.[d] It is found around Orthosia and throughout Caria and the neighbouring regions, but occurs at its finest in India.[e] ' Mild carbuncle ' is the term sometimes applied to ' lychnis ' of the second grade resembling the so-called ' Flower of Jove.'[f] I find that there are other varieties as well, one of which has a purple and the other a scarlet sheen.[g] These, when heated in the sun or by being rubbed between the fingers, *Lychnis.*

[e] The Carian *lychnis* was red garnet (*cf.* § 92), while ' the finest kind ' from India may have included rubies. See p. 204, n. [a].
[f] *Agrostemma flos Jovis* (XXI. 59, 67).
[g] Violet-red and rose-red tourmaline respectively. Like amber, tourmaline is pyroelectric.

attritu digitorum paleas et chartarum fila ad se
104 rapere. XXX. Hoc idem et Carchedonia facere dicitur, quamquam multo vilior praedictis. nascitur apud Nasamonas in montibus, ut incolae putant, imbre divino. inveniuntur ad repercussum lunae maxime plenae, Carthaginem[1] quondam deportabantur. Archelaus et in Aegypto circa Thebas nasci tradit fragiles, venosas, morienti carboni similes. potoria ex hac et ex lychnide factitata invenio, omnia autem haec genera contumaciter scalpturae resistunt partemque in signo cerae tenent.

105 XXXI. E diverso ad haec sarda utilissima, quae nomen cum sardonyche communicavit. ipsa volgaris et primum Sardibus reperta, sed[2] laudatissima[3] circa Babylona. cum lapicidinae quaedam aperiantur,[4] haerentes in saxo cordis modo reperiuntur. hoc metallum apud Persas defecisse tradunt, sed inveniuntur compluribus aliis locis, ut in Paro et Asso; in India trium generum: rubrae et quas

[1] Carthaginem *plerique codd.*: Carthagine B *Urlichs.*
[2] sed dh: est *Mayhoff*: in B.
[3] laudatissima Ladh: laudatissimae *Detlefsen, Mayhoff*: utilissimae B.
[4] aperiantur *Mayhoff*: appellantur B *Sillig*: aperirentur dh: *An* aperiuntur?

[a] Another account of the Carthaginian garnets (*cf.* § 92 and p. 238, n. [d]). The Nasamones of Libya lived to the N.E. of the Garamantes.
[b] Inferior red garnet.
[c] Here red garnet: *cf.* § 95.
[d] *Sarda* is partly carnelian (clear red chalcedony), and

are said to attract straws and papyrus fibres. XXX. *Carchedonia.* It is said that the same power is exerted by the Carthaginian stone, although it is far less valuable than those previously mentioned. It is formed in the mountain country of the Nasamones by rains of divine origin, as the inhabitants like to think. The stones are found when they reflect the moonlight, particularly at full moon, and in former times were exported to Carthage.[a] Archelaus records that brittle stones, full of veins and resembling a dying ember, are found in Egypt near Thebes.[b] I find that drinking vessels used commonly to be made from this stone and from 'lychnis.'[c] All these varieties, however, obstinately resist engraving and, when used as signets, retain a portion of the wax.

XXXI. On the contrary, sard, which shares a part *Sard.*
of its name with sardonyx, is extremely useful for § 91.
this purpose.[d] The stone itself is a common one and was first discovered at Sardis, but the most valuable specimens are found near Babylon.[e] When certain quarries are being opened up the stones come to light adhering to the rock like heart-wood. This mineral is said to be now exhausted in Persia, but sards are found in several other localities, for example in Paros and at Assos.[f] In India it occurs in three varieties: there are red stones, those known as

partly sard (brownish red chalcedony). Of the surviving specimens of ancient signets, a large proportion are sards and carnelians.
[e] Probably the word has nothing to do with Sardis, but is derived from the Persian *sered,* meaning 'yellowish red.' The supposed Persian and Babylonian stones originated in N.W. India (see below).
[f] A city in the Troad.

pionias vocant ab pinguitudine; tertium genus est
106 quod argenteis bratteis sublinunt. Indicae perlucent, crassiores sunt Arabicae. inveniuntur et circa Leucada Epiri et in Aegypto quae brattea aurea sublinuntur. et in his autem mares excitatius fulgent, feminae pigriores [1] et crassius nitent. nec fuit alia gemma apud antiquos usu frequentior—hac certe apud Menandrum et Philemonem fabulae superbiunt—nec ullae tralucentium tardius subfusae umore hebetantur, oleoque [2] magis quam alio liquore. damnantur ex iis melleae ac validius testaceae.

107 XXXII. Egregia etiam nunc sua topazo gloria est, suo virenti [3] genere et, cum primum reperta est, praelatae omnibus. accidit in Arabiae insula quae Cytis vocabatur, in quam devenerant Trogodytae praedones fame et tempestate fessi, ut, cum herbas
108 radicesque foderent, eruerent [4] topazon. haec Archelai sententia est. Iuba Topazum insulam in Rubro mari a continenti stadiis ccc abesse dicit; nebulosam et ideo quaesitam saepius navigantibus nomen ex ea causa accepisse, topazin enim Trogo-

[1] pigriores] pinguiores *coni. Mayhoff.*
[2] oleoque dh: oleaeque B.
[3] suo virenti dh *edd. vett.*: virenti B: e virenti *Mayhoff.*
[4] eruerent *Sillig*: eruerunt *codd.*

---

[a] And therefore perhaps dark red.
[b] These Indian stones were carnelian. The 'Arabian' stones were sard and no doubt also Indian.
[c] St. John's Island, which lies 35 miles S.E. of Ras Benas on the Egyptian mainland, is a notable source of peridot. Moreover, peridot, unlike oriental topaz, is comparatively soft, as Pliny implies in § 109. These two facts place the identification of *topazos* with peridot beyond all reasonable doubt. Oriental topaz seems to be included under *chrysolithi* (§ 126).

'pioniae,' or 'fatty stones,' because of their greasy lustre, and finally a third kind that is backed with silver foil.[a] The Indian stones are translucent, whereas the Arabian are somewhat opaque.[b] Others are found also in Epirus near Leucas and in Egypt; IV. 5. and these are backed with gold foil. Among sards too there are male and female stones, of which the former shine the more intensely, while the latter are less lively and have a duller lustre. In ancient times no gemstone was more commonly used than the sard—this, at any rate, is the gem that is flaunted in the plays of Menander and Philemon—and no *c.* 342–290 B.C. *and* 361–262 B.C. *respectively.* other translucent gems lose their lustre less readily when they are covered with moisture: olive oil affects them more than any other liquid. Of these stones, the honey-coloured meet with disapproval, which is even stronger in the case of those that look like earthenware.

Green stones. Peridot.

XXXII. Peridot still preserves its special reputation. It is a greenish variety of its own and, when first discovered, was preferred to any other. Once some Troglodytes, or Cave-dwellers, who were pirates, came ashore, exhausted by hunger and stormy weather, on an Arabian island, the name of which was Cytis; and it so happened that, while they were digging up plants and roots, they unearthed a peridot. This, at least, is the account accepted by Archelaus. Juba states that Topazos is the name of an island situated in the Red Sea at a distance of some 35 miles from the mainland.[c] According to him, the island is fogbound: consequently sailors often have to search for it, and this is why it has acquired its name; for in the Troglodyte language *topazin* means 'to

dytarum lingua significationem habere quaerendi. ex hac primum inportatam Berenicae reginae, quae fuit mater sequentis Ptolemaei, ab Philone praefecto; regi mire placuisse et inde factam statuam Arsinoae Ptolemaei uxori quattuor cubitorum, sacratam in
109 delubro quod Arsinoeum[1] cognominabatur. recentissimi auctores et circa Thebaidis Alabastrum oppidum nasci dicunt et duo genera eius faciunt, prasoides atque chrysopteron, simile chrysopraso. tota enim similitudo ad porri sucum derigitur. est autem amplissima gemmarum. eadem sola nobilium limam sentit, ceterae Naxio[2] et cotibus[3] poliuntur. haec et usu atteritur.

110 XXXIII. Comitatur eam similitudine propior quam auctoritate callaina, e viridi pallens. nascitur post aversa Indiae apud incolas Caucasi montis, Hyrcanos,[4] Sacas, Dahas, amplitudine conspicua, sed fistulosa ac sordium plena, sincerior praestantiorque multo in Carmania, utrobique autem in rupibus inviis et gelidis, oculi figura extuberans leviterque

[1] Arsinoeum *Urlichs*: aureum *codd.*
[2] Naxio *Hardouin*: Naxo B[1]Fa.
[3] et cotibus *om. Sillig*: e cotibus *coni. Mayhoff.*
[4] Hyrcanos *Urlichs*: phycaros L: pirachos F: Hyrcanos . . . Dahas *om.* B.

[a] Whereas τοπάζειν means 'to guess.'
[b] Probably olive-green and pale yellowish-green varieties.
[c] The Naxian stone (XXXVI. 54) is itself emery. Pieces of emery were used for filing gemstones, and drills and wheels coated with emery powder for engraving them.
[d] *Callaina* is green turquoise: the stone, as Pliny says, is

seek.'[a] Juba records that the stone was first brought from here as a gift for Queen Berenice, the mother of Ptolemy the Second, by his governor 285–246 B.C.
Philo; and that, because the king greatly admired it, a statue 4 cubits high was later made of peridot in honour of this Ptolemy's wife, Arsinoe, and consecrated in the shrine which was named after her the Arsinoeum. Our most recent authorities assert that the stone is found also near Alabastrum, a town in the Thebaid, and divide it into two varieties, the 'prasoides,' or 'leek-like,' and the 'chrysopteros,' or 'golden-feathered,'[b] of which the latter resembles the 'chrysoprasus.' In general, the colour tends to re- § 113.
semble the tints of the leek. Incidentally, the peridot is the largest of gemstones. Also, it is the only precious stone that is affected by an iron file, whereas all others have to be smoothed with Naxian stone[c] and emery. Moreover, peridot is worn away by use.

XXXIII. With this stone is associated, but more *Callaina.*
closely in respect of similarity in appearance than of esteem, the pale-green 'callaina.' It occurs in the hinterland beyond India among the inhabitants of the Caucasus, the Hyrcani, Sacae and Dahae. It is of exceptional size, but is porous and full of flaws. A far purer and finer stone is found in Carmania.[d] In both localities, however, 'callaina' occurs amidst inaccessible icy crags, where it is seen as an eye-shaped swelling loosely adhering to the rocks, as

porous. *Caucasus* is used in the widest sense. Turquoise is found in the Kara Tube mountains near Samarkand, but the most famous workings, probably very old, are near Nishapur in N.W. Persia. Pliny's *Carmania* perhaps refers inaccurately to this source.

adhaerescens [1] nec ut adnata petris, sed ut adposita.
111 quam ob rem scandere ad eas pigritia pedum equestres populos taedet, simul et periculum terret; ergo fundis e longinquo incessunt et cum toto musco excutiunt. hoc vectigal, hoc gestamen in cervice, digitis [2] gratissimum norunt, hinc census, haec gloria a pueritia deiectum numerum praedicantium; in quo varia fortuna [3] quidam ictu primo cepere praeclaras, multi ad senectam nullas. et venatus quidem callainis talis est. sectura inde formantur, alias
112 faciles.[4] optimis color smaragdi, ut tamen appareat alienum esse quod placeat. inclusae decorantur auro, aurumque nullae magis decent. quae sunt earum pulchriores, oleo, unguento, etiam mero colorem deperdunt, viliores constantius repraesentant, neque est imitabilior alia mendacio vitri. sunt qui in Arabia inveniri eas dicant in nidis avium quas melancoryphos vocant.

113 XXXIV. Viridantium et alia plura sunt genera. vilioris turbae prasius, cuius alterum genus sanguineis punctis abhorret, tertium virgulis tribus

[1] adhaerescens *Mayhoff*: adhaerescunt B: adhaerens *ceteri codd.*
[2] digitis B: divites *Gelen.*
[3] praedicantium; in quo varia fortuna *dist. Mayhoff*: *comma post* praedicantium, *semicolon post* fortuna *Sillig.*
[4] faciles B: fragiles L *Ianus.*

[a] The story was of course intended to deter prospectors.
[b] *I.e.*, apart from the difficulty of procuring it.
[c] Dark leek-green chalcedony.
[d] Heliotrope, or bloodstone, a leek-green chalcedony with red spots. See § 165.

though it had been attached to them, rather than formed upon them. Thus tribes accustomed to riding on horseback and too lazy to use their feet find it irksome to climb in search of the stones; and they are also deterred by the risks. They, therefore, shoot at them from a distance with their slings and dislodge them, moss and all.[a] This is the article that pays their taxes, this they acknowledge to be the most beautiful thing that can be worn on neck or fingers, from this they derive their wealth, this is their pride and joy as they boast of the number that they have shot down since their childhood, an operation in which success varies, seeing that some win fine stones with their first shot, while many reach old age without obtaining one. Such, then, is the way in which they hunt the 'callaina.' Subsequently, the stone is shaped by the drill, being in other respects [b] an easy stone to deal with. The best stones have the colour of 'smaragdus,' so that it is obvious, after all, that their attractiveness is not their own. They are enhanced by being set in gold, and no gem sets off gold so well. The finer specimens lose their colour if they are touched by oil, unguents or even undiluted wine, whereas the less valuable ones preserve it more steadfastly. No gemstone is more easily counterfeited by means of imitations in glass. Some authorities say that 'callainae' are found in Arabia inside the nests of the birds known as 'melancoryphi,' or 'black caps.' X. 86.

XXXIV. There are also many other kinds of *Prasius.* green stones. A member of the commoner class is the prase.[c] A second variety of this stone differs in respect of its blood-red spots,[d] and a third, because

dictinctum candidis. praefertur his chrysoprasos porri sucum et ipsa referens, sed haec paulum declinantem a topazo in aurum. huic et amplitudo ea est ut cymbia etiam ex ea fiant, cylindri quidem
114 et[1] creberrime. XXXV. India et has generat et nilion, fulgore ab ea distantem brevi et, cum intueare, fallaci. Sudines dicit et in Sibero Atticae[2] flumine nasci. est autem color fumidae topazi aut aliquando melleae. Iuba in Aethiopia gigni tradit in litoribus amnis quem Nilum vocamus, et inde nomen trahere. XXXVI. non tralucet molochitis; spissius viret ab colore malvae nomine accepto, reddendis laudata signis et infantum custodia quodamque innato contra pericula medicamine.
115 XXXVII. Viret et saepe tralucet iaspis, etiam victa multis antiquitatis gloriam retinens. plurimae ferunt eam gentes, smaragdo similem Indi, Cypros

[1] et (*ante* creberrime) *Mayhoff*: a B[1]: *om. ceteri codd.*
[2] Atticae *codd.*: Galatiae *coni. Urlichs e Procopio, de Aed. 5.4, fortasse recte.*

---

[a] Plasma, a bright leek-green chalcedony, which may show white spots or lines.
[b] Plasma, not to be confused with the *chrysoprasus* of § 77, or with chrysoprase.
[c] Sanskrit *nila* means 'dark blue,' so that this stone may in fact have been a blue sapphire (Warmington, *op. cit.*, p. 248). But the dull green stone described here seems to have been an inferior variety of prase.
[d] 'Galatia' may be right: see the *apparatus*.
[e] The green *iaspis* may have included green jasper (green opaque chalcedony), but when, as often (*saepe*), it was translucent, it was no doubt plasma. This stone is later described as being like *smaragdus*. The other stones mentioned in this

it is sharply marked with three white streaks.[a] Preference, however is given to the 'chrysoprasus,' or 'golden prase,' which likewise reproduces the tint of a leek, although in this case the tint veers slightly from that of peridot towards gold.[b] This stone, moreover, may be large enough to be made even into small cups, and it is very commonly cut into cylinders. *§ 109.*

Nilios. XXXV. India produces not only these stones, but also the 'nilios,'[c] which differs from the 'chrysoprasus' in showing a weak lustre and one that is elusive when it is looked at closely. Sudines states that it is found also in the Siberus, a river in Attica.[d] Its colour is that of smoky, or on occasion honey-coloured, peridot. Juba records that the stone is formed on the banks of the river known to us as the Nile, from which its name, according to him, is derived.

Malachite (cf. § 66). XXXVI. Malachite is an opaque stone of a rather deep green shade and owes its name to its colour, which is that of the mallow. It is warmly recommended because it makes an accurate impression as a signet, protects children, and has a natural property that is a prophylactic against danger.

Iaspis. XXXVII. A green stone that is often translucent is the 'iaspis,'[e] which still preserves the reputation that it enjoyed in the past, even though it now yields to many others. Numerous countries produce it. India produces a variety resembling 'smaragdus,' Cyprus one that is hard and dull greyish-green in colour,[f]

chapter are varieties of chalcedony that had not acquired special names.
[f] Ordinary chalcedony.

duram glaucoque pingui, Persae aëri similem, quae ob id vocatur aërizusa; talis et Caspia est. caerulea est circa Thermodontem amnem, in Phrygia purpurea et in Cappadocia ex purpura caerulea, tristis atque non refulgens. Amisos Indicae similem mittit, Calchedon turbidam. sed minus refert nationes
116 quam bonitates distinguere. optima[1] quae purpurae aliquid habet, secunda quae rosae, tertia quae smaragdi. singulis Graeci nomina ex argumento dedere. quarta apud eos vocatur boria, caelo autumnali matutino similis; haec erit illa quae aërizusa dicitur. item terebinthizusa, improprio, ut arbitror, cognomine velut e multis eiusdem generis composita gemmis.[2] similis est et sardae, imitata et violas.[3] non minus multae species reliquae sunt, sed omnes in vitium caeruleae, aut[4] crystallo similes[5] aut myxis. quam ob rem praestantiores funda cluduntur, ut sint patentes ab utraque parte nec praeter margines quicquam auro amplectente.

[1] optima Ba: optima ergo L *edd. vett.*
[2] item terebinthizusa, improprio . . . gemmis *post* myxis La, *transp. ego*: improprio . . . gemmis *om.* B *Mayhoff.*
[3] similis est . . . violas La: *om.* B: *in uncis ponit Mayhoff.*
[4] aut *edd. vett.*: ut B *Mayhoff*: et L.
[5] similes *plerique codd.*: similis B *Mayhoff.*

[a] This, like the other blue stones subsequently mentioned is 'sapphirine' chalcedony.
[b] A river in Pontus.

and Persia one that is like the blue sky and is therefore called 'aërizusa,' or 'sky-blue.'[a] A similar kind comes from the Caspian region. A deep-blue variety is found near the River Thermodon,[b] in Phrygia a purple one, and in Cappadocia another that is purplish-blue, sombre and without lustre. From Amisos comes a kind similar to the Indian, and from Chalcedon one that is cloudy.[c] But it is not so important to distinguish countries of origin as excellences. The best stone is that which has a shade of purple, the next has one of rose,[d] and the next again of 'smaragdus.' The Greeks have applied epithets to each kind in accordance with its character. The fourth variety is known among them as 'boria,' or 'north-wind iaspis,' because it is like the sky on an autumn morning. This will be identical with the kind that is called 'aërizusa.' There is § 115.
also the 'terebinthizusa,' or 'turpentine iaspis,' the epithet being inappropriate, in my opinion, because the stone is, as it were, compounded of many gems of the same variety,[e] for it is not only like a sard, but also resembles in its colour a violet. There are just as many kinds that remain to be described, but all are blue to a fault, or else are like rock-crystal or a sebesten plum.[f] Consequently the better specimens are set in an open bezel so that they may remain exposed on both faces, with only their edges clasped

[c] Amisos: the modern Samsoun, on the S. coast of the Black Sea. Chalcedon: the modern Skutari, opposite Istanbul. Both ports presumably exported chalcedony from the interior of Asia Minor.
[d] Rose-red cryptocrystalline quartz.
[e] See the *apparatus.*
[f] *I.e.*, yellowish-red.

117 vitium in iis est et brevis nitor nec longe splendescens et sal et quae ceteris omnia.[1] et vitro adulterantur, quod manifestum fit cum extra fulgorem spargunt atque non in se continent. reliquas sphragidas vocant, publico gemmarum nomine his
118 tantum dato quoniam optime signent.[2] totus vero oriens pro amuleto gestare eas traditur. ea quae ex iis smaragdo similis est saepe transversa linea alba media praecingitur et monogrammos vocatur; quae pluribus, polygrammos. libet obiter vanitatem Magicam hic quoque coarguere, quoniam hanc utilem esse contionantibus prodiderunt. est et onychi iuncta quae iasponyx vocatur, et nubem complexa et nives imitata et stellata rutilis punctis. est et sali Megarico similis et velut fumo infecta, quae capnias vocatur. magnitudine XVI[3] unciarum vidimus formatam inde effigiem Neronis thoracatam.

119 XXXVIII. Reddetur[4] et per se cyanos, accommodato paulo ante et iaspidi nomine a colore caeruleo. optima Scythica, dein Cypria, postremo Aegyptia.

[1] vitium . . . omnia *fortasse ponenda sunt ante* quam ob rem . . . amplectente.

[2] quoniam optime signent L: *om.* B: *in uncis ponit Mayhoff.*

[3] XVI *cod.* F: quindecim dh (magnitudine . . . thoracatam *om.* B).

[4] reddetur: reddatur *coni. Mayhoff.*

[a] These are varieties of plasma. See p. 256, n. [a].

[b] Probably ordinary chalcedony.

[c] Presumably the Greek term for *iaspis caerulea* (§ 115) was *κυανέα ἴασπις*, or simply *κύανος*.

by the gold. A defect found in them is their weak lustre and failure to shine at a distance, and also specks resembling salt, as well as all the faults that occur in other gemstones. They too can be counterfeited in glass, and the deception becomes obvious when the brightness of a stone is scattered abroad instead of being concentrated within. The remaining varieties are called 'sphragides,' or 'signets,' the common Greek name for a gemstone being thus bestowed on these alone because they are excellent for sealing documents. However, all the peoples of the East are said to wear them as amulets. That variety of 'iaspis' which resembles 'smaragdus' is often surrounded in the middle by a slanting white line, and is therefore called 'monogrammos,' or 'single-lined': if there are several such lines the stone is 'polygrammos,' or 'many-lined.'[a] In passing, it gives me pleasure to refute here, as elsewhere, the falsehoods of the Magi, who tell us that this stone is helpful to public speakers. There is also an 'iaspis' combined with onyx known as 'iasponyx,' or 'jasper onyx,' a stone that has a cloudy inclusion in it and specks on it that look like snow, and is spangled with red dots. There is also an 'iaspis' that resembles Megarian salt and is XXXI. 87.
stained as though with smoke: hence it is called 'capnias,' or 'smoky.'[b] I myself have seen a figure, representing Nero in a breastplate, that was made of this stone and was 16 inches high.

Blue stones. Azurite crystals.

XXXVIII. We shall now give a separate account of 'cyanus,' for a short time ago we applied this name to an 'iaspis' owing to its blue colour.[c] The best kind is the Scythian, then comes the Cyprian

adulteratur maxime tinctura, idque in gloria [1] regum Aegypti; adscribitur et qui primus tinxit. dividitur autem et haec in mares feminasque. inest ei aliquando et aureus pulvis, non [2] qualis sappiris; in his
120 enim aurum punctis conlucet. XXXIX. Caeruleae et sappiri, rarumque ut cum purpura. optimae apud Medos, nusquam tamen perlucidae. praeterea inutiles scalpturis intervenientibus crystallinis centris. quae sunt ex iis cyanei coloris mares existimantur.

121 XL. Alius ex hoc ordo purpureis dabitur aut quae ab iis descendunt. principatum amethysti tenent Indicae, sed in Arabiae quoque parte, quae finitima Syriae Petra vocatur, et in Armenia minore et Aegypto et Galatia reperiuntur, sordidissimae autem vilissimaeque in Thaso et Cypro. causam nominis adferunt quod usque ad vini colorem accedens, priusquam eum degustet, in violam desinat fulgor, alii quia [3] sit quiddam in purpura illa non ex toto igneum, sed in vini colorem deficiens. perlucent

[1] in gloria dh: in gloriam B: in gloria est *Mayhoff*.
[2] non *om. Sillig, Ianus* (*per errorem*).
[3] alii quia *Sillig*: aliqui Ba: aliqua Fdh.

---

[a] Pliny is inaccurately summarizing Theophrastus *de Lap.* 55, where *massive* azurite used as a *pigment* (*cf.* XXXIII. 161) is discussed. The artificial Egyptian azurite was a blue frit (a kind of glaze).

[b] Lapis lazuli sometimes contains brassy specks of pyrites. This is not true of sapphire, which is therefore not to be identified with *sappirus*.

[c] Lapis lazuli is not known to occur in Persia. However, much of it must have come from the famous mines of the upper Koksha valley in Badakshan (N. Afghanistan), which have been worked for thousands of years.

[d] These are unconvincing attempts to reconcile the colour

and lastly there is the Egyptian. It is very commonly counterfeited by tinting other stones, and this is a famous achievement of the kings of Egypt, whose records also mention the name of the king who first tinted stones in this way.[a] 'Cyanus,' too, is divided into male and female varieties. Sometimes inside 'cyanus' there is a golden dust, which, however, differs from that which occurs inside lapis lazuli; for there the gold glistens as dots.[b]

Lapis lazuli.

XXXIX. Lapis lazuli also is blue and is only rarely tinged with purple. The best is found in Persia,[c] but nowhere are there any transparent stones. Moreover, they are useless for engraving, because cores like rock-crystal interfere with this. Lapis lazuli which is of the colour of azurite is regarded as a male variety.

Amethysts.

XL. Next, we shall assign to another category purple stones or those varieties that deviate from them. Here the first rank is held by the amethysts of India, although amethysts are found also in that part of Arabia, known as Petra, which borders on Syria, as well as in Lesser Armenia, Egypt and Galatia, while the most imperfect and worthless specimens occur in Thasos and Cyprus. The name 'amethyst' has been explained by the supposed fact that the brilliant colour of the stone closely approaches that of wine, but stops short of absorbing it and ends in a violet shade. Others, again, offer the explanation that the characteristic purple colour contains an element that is not quite bright red, but fades into the colour of wine.[d] However this may be, all

of the stone with the supposed meaning of its name, 'not drunken.'

autem omnes violaceo decore, scalpturis faciles.
122 Indica absolutum Phoeniciae[1] purpurae colorem
habet. ad hanc tinguentium officinae dirigunt vota.
fundit autem aspectu[2] leniter blandum neque in
oculos, ut carbunculi, vibrantem. alterum earum
genus descendit ad hyacinthos; hunc colorem Indi
socon vocant, talemque gemmam socondion. dilutior
ex eodem sapenos vocatur, eademque pharanitis in
contermino Arabiae, gentis nomine. quartum genus
123 colorem vini habet. quintum ad vicina crystalli
descendit albicante purpurae defectu. hoc minime
probatur, quando praecellentis[3] debeat esse in
suspectu velut ex carbunculo refulgens quidam
leniter in purpura roseus color.[4] tales aliqui malunt
paederotas vocare, alii anterotas, multi Veneris
124 genam.[5] Magorum vanitas ebrietati eas resistere
promittit et inde appellatas, praeterea, si lunae
nomen ac solis inscribatur in iis atque ita suspendantur e collo cum pilis cynocephali et plumis hirundinis, resistere veneficiis, iam vero quoquo modo adesse reges adituris, grandinem quoque avertere ac

[1] Phoeniciae *Detlefsen*: phenicis dh: fellis et B: felicis Fa *Sillig*: Phoenices *Mayhoff*.

[2] aspectu dh: aspectum Ba.

[3] praecellentis *ego*: praecellens *codd.*

[4] color B *Sillig*: nitor Ldh *Mayhoff*.

[5] *post* genam *add. edd. vett. ex* FLdh quod maxime videtur decere et specie et colore extremo gemmae.

[a] Reading *aspectu* and understanding with Mayhoff *colorem* from the last sentence but one.

amethysts are transparent and are of a handsome violent tint, and all are easy to engrave. The Indian amethyst has the perfect shade of Tyrian purple at its best, and it is this stone that the dye-factories aspire to emulate. The stone, when examined, IX. 135.
sheds a gentle, mellow colour, which does not, like that of the 'carbunculus,' dazzle the eye.[a] A second kind of amethyst deviates towards the sapphire. § 125.
Its colour is known to the Indians as 'socos,' and the variety of gem as 'socondios.' A fainter variety of the same stone is called 'sapenos' and also, in the districts adjacent to Arabia, 'pharanitis' after the name of a tribe. A fourth kind[b] has the colour of red wine, while a fifth degenerates nearly into rock-crystal, since its purple fades away towards colourlessness. This is the least valuable kind, since a fine stone should, when held up to the light, display in its purple colour a rosy tint shining forth gently as though from a 'carbunculus.' Some people prefer to call such stones 'paederotes,' or 'favourites,' others 'anterotes,' or 'love requited,' and many 'eyelid of Venus.' The Magi falsely claim that the amethyst prevents drunkenness, and that it is this property that has given it its name. Moreover, they say that, if amethysts are inscribed with the names of the sun and moon and are worn hanging from the neck along with baboons' hairs and swallows' feathers, they are a protection against spells. Again, they assert that, however they are used, amethysts will assist people who are about to approach a king as suppliants, and that they keep off hail and locusts if they are used in conjunction with an incantation

[b] Possibly not amethyst, but red garnet.

locustas precatione addita quam demonstrant. nec non in smaragdis quoque similia promisere, si aquilae scalperentur aut scarabaei, quae quidem scripsisse eos non sine contemptu et inrisu generis humani arbitror.

125 XLI. Multum ab hac distat hyacinthos, ab vicino tamen colore descendens. differentia haec est, quod ille emicans in amethysto fulgor violaceus diluitur[1] hyacintho primoque aspectu gratus evanescit antequam satiet, adeoque non inplet oculos ut paene non attingat, marcescens celerius nominis sui flore.

126 XLII. Hyacinthos Aethiopia mittit et chrysolithos aureo fulgore tralucentes. praeferuntur his Indicae et, si variae non sint, Tibarenae. deterrimae autem Arabicae, quoniam turbidae sunt et variae, fulgoris interpellati nubilo macularum, etiam quae limpidae contigere, veluti scobe refertae. optimae sunt quae

[1] diluitur B: diluitur in *cod.* a *Sillig.*

[a] Sapphire (blue corundum). According to Furtwängler, *Die antiken Gemmen*, Vol. III, p. 393, a faint amethyst, but a corundum suits the context better. *Cf.* §§ 126–8, where other varieties of corundum seem to be mentioned. Moreover, Solinus (*Collectanea* XXX, 33) describes *hyacinthus* in language which applies to sapphires (corundum), but not to amethysts (quartz): *scalpturis certe minime adcommodatus, ut qui tritum respuat, nec tamen penitus invictus; nam adamante scribitur et notatur.* The hardness of corundum is second only to that of the diamond.

which they prescribe. Moreover, they have made similar claims on behalf of the 'smaragdus,' provided that it is engraved with an eagle or a scarab beetle. I can only suppose that in committing these statements to writing they express a derisive contempt for mankind.

XLI. There is a considerable difference between the amethyst and the 'hyacinthus,'[a] which, however, shows only a slight deviation from a closely related tint. The difference lies in the fact that the brilliant violet radiance that is characteristic of the amethyst is here diluted with the tint of the 'hyacinth flower';[b] and although at first sight the colour is agreeable, it loses its power before we can take our fill of it and, indeed, is so far from satisfying the eye that it almost fails to strike it and droops more rapidly than the flower of the same name.

Hyacinthus (blue sapphire).

XLII. Besides the 'hyacinthus,' the 'chrysolithus,'[c] a bright golden, transparent stone, comes to us from Ethiopia.[d] Preference over this variety, however, goes to the Indian and, if the colour is uniform, to the Tibarene stones.[e] The worst stones are the Arabian, for these are murky and mottled, with their brilliance broken up by cloudy spots. Even the clear stones that have come to light are full of a kind of powder. The best specimens are those

Yellow stones. Chrysolithus.

[b] Certainly not the hyacinth: perhaps the corn flag, *Gladiolus segetum* (*cf.* XXI. 34, 65, etc.).

[c] Yellow sapphire (oriental topaz), but perhaps also yellow zircon.

[d] Probably Indian stones handled by Ethiopian middlemen. *Cf.* p. 238, n. [e]. So, too, the Arabian stones.

[e] The Tibareni lived on the S. coast of the Black Sea. These stones may have been citrine (yellow quartz).

in collatione aurum albicare quadam argenti facie cogunt. hae funda includuntur perspicuae, ceteris
127 subicitur aurichalcum. XLIII. Tametsi exiere iam de gemmarum usu,[1] appellantur aliquae et chryselectroe, in colorem electri declinantes, matutino tamen tantum aspectu. Ponticas deprehendit levitas. quaedam durae sunt ac rufae, quaedam molles, sordidae. Bocchus auctor est et in Hispania repertas [2] quo in loco crystallum dixit ad libramentum aquae puteis defossis erui, chrysolithon XII
128 pondo a se visam. XLIV. Fiunt et leucochrysi interveniente candida vena. sunt et in hoc genere capniae. sunt et vitreis similes, velut croco fulgentes; vitro adulterantur ut visu discerni non possint; tactus deprendit, tepidior in vitreis. XLV. In eodem genere sunt melichrysi veluti per aurum sincero melle [3] tralucente. has India fert, quamquam in duritia fragiles, non ingratas. eadem et xuthon parit, plebeiam sibi gemmam.
129 XLVI. Candidarum dux est paederos, quamquam

[1] tametsi . . . usu *ad praecedentia refert Mayhoff.*
[2] repertas dh *edd. vett.*: repertam B: repertas et *Mayhoff.*
[3] per aurum sincero melle] auro per sincerum mel *coni. Ianus.*

---

[a] Perhaps mostly cinnamon-stone (hessonite), but, like the Tibarene stone (§ 126), the less heavy Pontic stones were probably citrine; and likewise the two Spanish varieties.
[b] Pale yellow corundum.
[c] Perhaps smoky quartz.
[d] Honey-coloured corundum, but perhaps also zircon.

which, placed alongside gold, make it assume a white, silvery appearance. These stones are set in an open bezel so as to remain fully transparent, while the rest are backed with brass foil.

XLIII. Although they have now ceased to be used as gems, there are certain stones to be mentioned that are called 'chrysoelectri,' or 'golden amber.'[a] Their colour passes into that of amber, but only in morning light. Those from Pontus are betrayed by their light weight. Some of these stones are hard and reddish, while some are soft and full of flaws. Bocchus assures us that they have been found also in Spain, in the place where, according to his previous account, rock-crystal is dug up from shafts sunk to water-level, and adds that he saw a 'chrysolithus' weighing twelve pounds. *Chryso-electri.* § 24.

XLIV. There occur also 'leucochrysi,'[b] or 'golden-white' stones, which are traversed by a bright white vein; and there is also the 'capnias,' or 'smoky stone' belonging to this class.[c] There are, moreover, stones closely resembling those made of glass-paste, their colour being a kind of bright saffron-yellow. They can be so convincingly counterfeited in glass that the difference cannot be observed, although it may be detected by touch, since the glass-paste feels warmer. XLV. In the same class is the 'melichrysus,' or 'honey-gold stone,' which looks like pure honey seen through a clear film of gold.[d] This stone, a product of India, is brittle, although hard, but is by no means unpleasing. India produces also the 'xuthos' or 'brownish-yellow stone,' a gem regarded there as fit only for the common folk. § 169.

XLVI. White stones are headed by the 'paederos,' *The opal (cf. §§ 80–84).*

quaeri potest in quo colore numerari debeat totiens iactati per alienas pulchritudines nominis, adeo ut decoris praerogativa in vocabulo facta sit. sed tamen et suum genus expectatione tanta dignum. coeunt quippe in tralucidam crystallum viridis suo modo aër simulque purpurae et quidam vini aurei nitor semper extremus in visu, sed purpura semper coronatus.[1] madere videtur et singulis his et pariter
130 omnibus, nec gemmarum esse ulla liquidior potest iucunda suavitate oculis. haec laudatissima est in Indis, apud quos sangenon vocatur, proxima in Aegypto, ubi tenites,[2] tertia in Arabia, verum scabra, tum Pontica, quae mollius radiat, Thasia, et ipsa mollior, et Galatica[3] et Thracia et Cypria. vitia earum languor aut alienis turbari coloribus et quae ceterarum.

131 XLVII. Proxima candicantium est asteria. principatum habet proprietate naturae, quod inclusam lucem pupilla quadam continet. hanc transfundit cum inclinatione velut intus ambulantem alio atque

[1] semper coronatus B *Sillig*: coronatus dh *Mayhoff*.

[2] tenites dh *Hardouin*, *Sillig*: syenites *Urlichs*, *Mayhoff*: senytes L: *om.* B.

[3] et Galatica *Mayhoff*: est Galatica *Sillig*, *ex* B, *qui om.* Galatica . . . ceterarum.

---

[a] The name is applied to an amethyst (§ 123) and to two plants, and is already associated with opals in § 84.

[b] *I.e.*, probably opals. See § 84 and note.

[c] There is a colourless stone (a natural silica glass) known to Egyptologists: it bears a similar name. But *syenites* may well be the right reading. The list of place-names given here probably applies to amethysts (see § 84 and note, and § 121); and there are ancient amethyst workings not far from Aswan (anc. Syene).

or ‘favourite,’ although we may ask to which colour we should assign a stone bearing a name that is so often bandied about among beautiful objects of different kinds[a] that the mere term has become a guarantee of beauty. However, the species which the name claims as its very own[b] likewise fulfils our great expectations. Here, indeed, with the transparency of the rock-crystal are associated a characteristic sky-green tint, along with a brilliant glint of purple and of golden wine, of which the last colour is always the last to be seen, but always has a purple halo. All these colours, both individually and collectively, seem to pervade the stone; and there is no gemstone that can match its clarity, which is delightfully agreeable to the eye. The most highly valued kind is found in India, where it is known as ‘sangenon,’ while the second-best occurs in Egypt, § 84.
where the name used is ‘tenites.’[c] Third in order is a variety found in Arabia, but this kind is rough. Then there is the ‘paederos’ from Pontus, which has a weaker lustre, and the kind from Thasos, which is still weaker. Finally, there are the stones of Galatia, Thrace and Cyprus. The defects of the ‘paederos’ are faintness and the intrusion of uncharacteristic colours, as well as those that belong to all other gems.

XLVII. Next among the bright colourless stones *Asteria.*
is the ‘asteria,’ or ‘star stone,’[d] which holds its high position owing to a natural peculiarity, in that a light is enclosed in it, stored in something resembling the pupil of the eye. This light is transmitted and, as the stone is tilted, is displayed successively in different places, as if capable of locomotion within.

[d] A very pale star-sapphire?

alio loco reddens. eadem contraria soli regerit candicantes radios in modum stellae, unde nomen invenit. difficiles in India natae ad caelandum. praeferuntur Carmanicae.

132 XLVIII. Similiter candida est quae vocatur astrion, crystallo propinqua, in India nascens et in Patalenes [1] litoribus. huic intus a centro stella lucet fulgore pleno lunae. quidam causam nominis reddunt quod astris opposita fulgorem rapiat et regerat. optimam in Carmania gigni dicunt nullamque minus obnoxiam vitio; cerauniam etiam [2] vocari quae sit deterior; pessimam vero [3] lanternarum lumini
133 similem. XLIX. celebrant et astrioten, mirasque laudes eius in Magicis artibus Zoroastren cecinisse produnt. L. Astolon [4] Sudines dicit oculis piscium similem esse, radiare fulgore candido ut solem.[5]

134 LI. Est inter candidas et quae ceraunia vocatur, fulgorem siderum rapiens, ipsa crystallina, splendoris caerulei, in Carmania nascens. Zenothemis fatetur

[1] Patalenes *Güthe*: Pallenes Ldh: *om.* B.
[2] etiam B: enim dh *cod. Poll.*
[3] vero BFdh: om. *edd. vett.*
[4] astolon dh: *cf. indicem*: astrobolon L *edd. vett.*
[5] ut solem BLa: in sole *cod.* h *Sillig.*

[a] Probably the moonstone.
[b] Around the mouths of the Indus.
[c] Perhaps also moonstone.
[d] Possibly cat's-eye quartz.

When it is held up to the sun the same stone reflects bright beams radiating as if from a star; and thus it has acquired its name. The stones found in India are difficult to engrave, and those from Carmania are preferred.

Astrion. XLVIII. A similarly bright colourless stone is the 'astrion,'[a] or 'little star,' which closely resembles rock-crystal, and occurs in India and on the coasts of Patalene.[b] It has inside it at the centre a star shining brightly like the full moon. The name is sometimes explained by the fact that the stone, when held up to the stars, is supposed to catch their glitter and reflect it. It is said that the best variety is found in Carmania, and that no kind of gem is less liable to possess defects. We are told that there is also a variety known as 'ceraunia,' or 'thunder-stone,' which is inferior, and that the worst of all recalls the glimmer of a lantern. *Astriotes.* XLIX. Another stone that is much esteemed is the 'astriotes,' again a 'star stone.'[c] It is recorded that Zoroaster proclaimed the remarkable merits of this stone when used in the practice of magic. *Astolos.* L. The 'astolos', according to Sudines, resembles the eye of a fish and sheds brilliant white beams like the sun.[d]

Ceraunia. LI. Among the bright colourless stones there is also the one called 'ceraunia' ('thunder-stone') which catches the glitter of the stars[e] and, although in itself it is like rock-crystal, has a brilliant blue sheen.[f] It is found in Carmania. Zenothemis admits that it

[e] 'Imprisons a bright star' probably conveys Pliny's meaning.
[f] This may be the blue 'bloom' of the otherwise colourless moonstone.

albam esse, sed habere intus stellam coruscantem;[1] fieri et hebetes ceraunias, quas in nitro et aceto maceratas per aliquot dies concipere stellam eam,
135 quae post totidem menses relanguescat. Sotacus et alia duo genera fecit ceranniae, nigrae rubentisque; similes eas esse securibus.[2] ex his quae nigrae sint ac rotundae, sacras esse; urbes per illas expugnari et classes; baetulos vocari; quae vero longae sint, ceraunias. faciunt et aliam raram admodum, Magorum studiis expetitam, quoniam non aliubi inveniatur quam in loco fulmine icto.

136 LII. Proximum cerauniae nomen apud eos habet quae vocatur iris. effoditur in quadam insula Rubri maris quae distat a Berenice urbe $\overline{\text{LX}}$ p., cetera sui parte crystallus. itaque quidam eam radicem crystalli esse dixerunt. ex argumento vocatur iris, nam sub tecto percussa sole species et colores arcus caelestis in proximos parietes eiaculatur, subinde mutans magnaque varietate admirationem sui
137 augens. sexangulam esse ut crystallum constat, sed aliqui scabris lateribus et angulis inaequalibus dicunt, in sole aperto[3] radios in se candentes dis-

[1] coruscantem *Gesner*: concursantem *codd.*
[2] similes . . . securibus *in uncis ponit Mayhoff.*
[3] aperto B: aperto proiectam dh.

[a] King (*op. cit.*, pp. 154–55) suggests that these were Stone Age axe-heads and hammer-heads.
[b] Presumably meteorites.
[c] Probably not rainbow-quartz, but rock-crystal, occurring naturally as a prism.
[d] *I.e.*, apart from forming a spectrum.

is colourless, but describes it as 'containing a twinkling star.' He mentions that there are also to be found dull 'cerauniae' which if steeped in soda and vinegar for several days form such a star, which, however, fades away again after as many months. Sotacus distinguishes also two other varieties of the stone, a black and a red, resembling axe-heads. According to him, those among them that are black and round are supernatural objects; and he states that thanks to them cities and fleets are attacked and overcome, their name being 'baetuli,' while the elongated stones are 'cerauniae.'[a] These writers distinguish yet another kind of 'ceraunia' which is quite rare. According to them, the Magi hunt for it zealously because it is found only in a place that has been struck by a thunderbolt.[b]

LII. The name that appears in these writers immediately after 'ceraunia' is that of the so-called 'iris,' or 'rainbow stone.'[c] It is dug up on an island in the Red Sea 60 miles distant from the city of Berenice. In every other respect[d] it is merely rock-crystal, and is sometimes called 'root of crystal' for this reason. It is known as 'iris' in token of its appearance, for when it is struck by the sunlight in a room it casts the appearance and colours of a rainbow on the walls near by, continually altering its tints and ever causing more and more astonishment because of its extremely changeable effects. It is agreed that it has hexagonal faces, like the rock-crystal, but some people assert that it has rough faces and unequal angles; and that in full sunlight it scatters the beams that shine upon it, and yet at the same time lights up adjacent objects by project-

Iris.

cutere, aliquo vero ante se proiecto nitore adiacentia inlustrare. colores autem non nisi ex opaco, ut diximus, reddunt, nec ut ipsae habeant, sed ut repercussu parietum elidant; optima quae maximos arcus
138 facit simillimosque caelestibus. est et alia iritis, cetera similis, sed praedura. hanc Orus [1] crematam tusamque ad ichneumonum morsus remedio esse scripsit, nasci autem in Perside. LIII. Similis aspectu est, sed non eiusdem effectus, quae vocatur leros,[2] alba nigraque macula in traversum distinguentibus crystallum.

LIV. Expositis per genera colorum principalibus gemmis reliquas per litterarum ordinem explicabimus.

139 Achates in magna fuit auctoritate, nunc in nulla est, reperta primum in Sicilia iuxta flumen eiusdem nominis, postea plurimis in terris, excellens [3] amplitudine, numerosa varietatibus, quae mutant [4] cognomina eius. vocatur enim iaspachates, cerachates, smaragdachates, haemachates, leucachates, dendrachates, quae velut arbusculis insignis est, antachates,[5]

[1] Orus BFL: Horus *edd. vett.*
[2] leros *Sillig, ex indice*: ieros B.
[3] excellens *Mayhoff*: excedens *codd.*
[4] quae mutant BF: mutantibus L.
[5] antachates *edd. vett., Mayhoff*: anthachates (anthacates B) *Kulb, fortasse recte*: autachates *Hardouin.*

---

[a] Whereas the ichneumon is an *Egyptian* animal (VIII. 88).
[b] Pliny seems to include banded agate and eye-agate under *onyx* (§ 90–91): see p. 236, n. [b] and p. 237, n. [e]. Under *achates* Pliny describes various kinds of irregularly marked

ing a kind of gleam in front of itself. But, as I have said, it does not produce any colours except in a dark place; and even then, the effect is not as though the stone itself contained the colours, but rather as though it were forcing them to rebound from the wall. The best kind is that which produces the spectra that are the largest in size with the closest resemblance to a rainbow. There is also another 'rainbow stone,' the 'iritis,' which is similar to the former in every respect except that it is very hard. According to Orus, this when burnt and crushed to a powder cures ichneumon bites, but is actually found in Persis.[a] LIII. A stone that is similar in its appearance but different in its effects is the so-called 'leros,' or 'trifle,' in which there is a white and a black streak traversing the rock-crystal.

LIV. I have now discussed the principal gemstones, classifying them according to their colour, and shall proceed to describe the rest in alphabetical order.

The agate [b] was once held in high esteem, but now *Achates.*
enjoys none. It was first discovered in Sicily near the river of the same name,[c] but was later found in III. 90.
many countries. Its size can be exceptional, and its varieties are very numerous. The descriptive terms applied to it vary accordingly. For example, it is given names like 'jasper-agate,' 'wax-agate,' 'emerald-agate,' 'blood-agate,' 'white agate,' 'tree-agate' (which is distinguished by marks resembling small trees), 'anti-agate' (which, when burnt, smells

chalcedony. For instance *dendrachates* is dendritic agate (moss-agate).
[c] The modern Carabi (Canatello). The district in question is near its head-waters, not far from Giuliana.

quae, cum uritur, murram redolet, coralloachates[1] guttis aureis sappiri modo sparsa, qualis copiosissima in Creta. quae et sacra appellatur, quoniam[2] putant contra araneorum et scorpionum ictus eam
140 prodesse. quod in Siculis utique crediderim, quoniam primo[3] eius provinciae adflatu scorpionum pestis extinguitur. et in India inventae[4] contra eadem pollent, magnis et aliis miraculis: reddunt enim fluminum species, nemorum, iumentorum. etiam[5] pateras,[6] staticula, equorum ornamenta inde medicisque[7] coticulas faciunt, nam spectasse etiam prodest
141 oculis. sitim quoque sedant in os additae. Phrygiae viridia non habent. Thebis Aegyptiis repertae carent rubentibus venis et albis, hae quoque contra scorpiones validae. eadem auctoritas et Cypriis. sunt qui maxime probent vitream perspicuitatem in his. reperiuntur et in Trachinia circa Oetam et in Parnaso et in Lesbo et in Messene similes limitum[8]
142 floribus et in Rhodo. aliae apud Magos differentiae sunt in iis: quae leoninis pellibus similes reperiuntur,

[1] coralloachates h *Sillig*: corallachates *Mayhoff*; *sed cf.* § 153.
[2] quoniam B: *om. ceteri codd.*: quidam *Mayhoff*.
[3] primo *Mayhoff ex coni. Iani*: primum *codd.*
[4] inventae . . . pollent dh: invenitur . . . pollens B.
[5] etiam L *Mayhoff, qui ad praecedentia refert*: iam Fdh.
[6] pateras *ego*: ederas *aut* hedere *codd.*: hederae *Sillig, qui ad praecedentia refert*: essedariis *Mayhoff*.
[7] inde medicisque *Mayhoff*: medicis indeeque B: unde medici dh.
[8] limitum BFdh *Sillig, Mayhoff*: illitis L *edd. vett. An inditis?*

like myrrh) and 'coral-agate,' which is sprinkled with golden particles like those of lapis lazuli and § 120.
is a variety that is very plentiful in Crete. Another name for it is 'sacred agate,' since[a] it is thought to counteract the bites of spiders and scorpions. This I would in any case believe to be true of the Sicilian stones, since the venom of scorpions is destroyed by a mere hint of a breeze from that province. The agates found in India are also effective in this way and have other very remarkable qualities besides. For they exhibit the likenesses of rivers, woods and draught-animals; and from them also are made dishes,[b] statuettes, horse-trappings and small mortars for the use of pharmacists, for merely to look at them is good for the eyes.[c] Moreover, if placed in the mouth, they allay thirst. The Phrygian agates contain no green, while those found at Egyptian Thebes lack red and white veins, but these again are effective against scorpions. Those of Cyprus are similarly esteemed. Some people warmly approve of the transparent glassy portions of these last stones. Agates are found too in Trachis near Mount Oeta, on Parnassus, in Lesbos, in Messenia (where they look like flowers on a field-path)[d] and in Rhodes. Other differences among agates are found in the writings of the Magi. Stones are found that resemble

[a] There is no need to alter *quoniam* to *quidam*: *sacra* no doubt stands for ἱερά, *i.e.*, supernaturally powerful. *Cf. sacras* in § 135.
[b] See the *apparatus*.
[c] A *non sequitur*: Pliny, or his source, may have confused stones for grinding eye-salves (*cf.* XXXVI. 63) with boxes (*pyxides*) in which the salves were kept. Or does *nam* here mean 'moreover'?
[d] Text uncertain.

potentiam habere contra scorpiones dicunt. in
Persis vero suffitu earum tempestates averti et
presteras, flumina sisti—argumentum esse, si in
ferventes cortinas additae refrigerent—sed ut
prosint leoninis iubis adalligandas, nam hyaenae
additae [1] abominantur discordiam [2] domibus. eam
vero quae unius coloris sit invictam athletis esse,
argumento,[3] quod in ollam plenam olei coiecta [4]
cum pigmentis, intra duas horas suffervefacta, unum
colorem ex omnibus faciat minii.
143 Acopos nitro colore [5] similis est, pumicosa, guttis
aureis stellata. cum hac oleum suffervefactum per-
unctis lassitudinem, si credimus, solvit. Alabastritis
nascitur in Alabastro Aegypti et in Syriae Damasco
candore interstincto variis coloribus. haec cremata
cum fossili sale et trita gravitates oris et dentium
144 extenuare dicitur. Alectorias vocant in ventriculis
gallinaceorum inventas crystallina specie, magni-
tudine fabae, quibus Milonem Crotoniensem usum
in certaminibus invictum fuisse videri volunt.
Androdamas argenti nitorem habet, ut adamas,[6]
quadratis semper tessellis similis. Magi putant

[1] additae B *Sillig*: addita *Mayhoff*: pelli (pelle F) similem *ceteri codd.*
[2] discordiam B: discordialem *ceteri codd.*
[3] argumento B: argumentum *Sillig*: argumentum eius *ceteri codd.*
[4] coiecta *Ianus*: coiectu B: cocta *aut* coctam *ceteri codd.*
[5] colore *Sillig*: colori B: *om. ceteri codd.*
[6] ut adamas *om.* B: *in uncis ponit Mayhoff.*

---

[a] In Persia, perhaps 'dust-devils.'
[b] Reading uncertain.
[c] *Cf.* XXXVI. 152, and p. 122, n. [a].

a lion's skin, and these, they claim, are effective against scorpions. But in Persia, according to them, the fumes from these stones, when they are burnt, avert storms and waterspouts [a] and stop the flow of rivers, the test of a genuine stone being that it should cool the water when placed in a cauldron that is on the boil. But they insist that, if the stones are to do good, they should be tied to hairs from a lion's mane. Incidentally, when attached to hairs from a hyena's mane, they avert discord in the household.[b] According to the Magi, there is an agate of one single colour that makes athletes invincible. The method of testing such a stone is to throw it into a pot full of oil with various pigments: when it has been heated for no more than two hours it should have reduced all the pigments to a single shade of vermilion.

The 'acopos,'[c] or 'reviver,' which in colour *Acopos.* resembles soda, is porous and spangled with gold particles. Oil heated along with this stone and applied as an embrocation dispels fatigue, or so we are led to believe.

'Alabastritis,' which is found at Alabastrum in *Alabastritis (onyx-marble).* Egypt and at Damascus in Syria, is a white stone interspersed with various colours. When burnt with XXXVI. 61. rock salt and pounded, it is said to alleviate bad breath caused by the mouth and teeth. 'Alectoriae,' *Alectoriae.* or 'cock stones,' is the name given to stones found in the gizzards of cocks. In appearance they are like rock-crystal, and in size like beans; and it is claimed that Milo of Croton owes to his use of these stones his *6th cent.* B.C. reputation as one who was never worsted in a contest. The 'androdamas,' or 'man tamer,' has a silvery *Androdamas (pyrites).* glint, like 'adamas,' and always resembles small

nomen inpositum ab eo, quod impetus hominum et iracundias domet. argyrodamas eadem sit an alia,
145 auctores non explicant. Antipathes nigra non tralucet. experimentum eius ut coquatur in lacte; facit enim id murrae simile. inmensum quiddam in hac fortassis aliquis expectet, in tot exemplis uni possessione huius nominis data. contra effascinationes auxiliari eam Magi volunt. Arabica ebori simillima est, et hoc videretur, nisi abnueret duritia. hanc putant contra dolores nervorum prodesse habentibus. Aromatitis et ipsa in Arabia invenitur, sed et in Aegypto circa Philas, ubique lapidosa et murrae coloris et odoris, ob hoc reginis frequentata.
146 Asbestos in Arcadiae montibus nascitur coloris ferrei. Aspisatim Democritus in Arabia nasci tradit, ignei coloris, et oportere cum cameli fimo splenicis adalligari, inveniri utique in nido Arabicarum alitum; et aliam eodem nomine ibi in Leucopetra nasci, argentei coloris, radiantem, contra[1] lymphatum
147 habentem vim.[2] Atizoen in India et Persidis Acidane monte nasci, argenteo nitore fulgentem,

[1] contra L *cod. Poll.*, *Urlichs*: cum Badh: cum . . . contra *Mayhoff* (*in textu*).

[2] habentem vim *Urlichs*: habentium BFdh *Sillig*: habentibus *Mayhoff* (*in textu*): ⟨sanari anim⟩um lymphatum habentium *coni. Mayhoff* (*in app.*).

---

[a] The text is corrupt.

cubes. The Magi suppose that its name has been applied to it in virtue of the fact that it subdues violence and hot temper in men. Whether the 'argyrodamas,' or 'silver tamer,' is the same, or a different, stone, is not made clear by our authorities. *Argyrodamas.* 'Antipathes,' or the 'contrary stone,' is black and opaque. *Antipathes (jet?).* Its genuineness is tested by boiling it in milk, to which it gives the appearance of myrrh. One might perhaps be entitled to expect something prodigious of this stone; for there are many instances of 'antipathetic' substances, and yet it has been granted exclusive possession of the name. *Cf.* § 59. The Magi claim that it helps to counteract witchcraft. The Arabian stone closely resembles ivory, and would pass for it if its hardness did not forbid this. *Arabica.* XXXVI. 153. According to the Magi, it helps its possessors when they have pains in their sinews. The 'aromatitis,' or 'aromatic stone,' is also found in Arabia, but likewise in Egypt near Philae. *Aromatitis (ambergris?).* It is always stony and, since it has the colour and scent of myrrh, it is much used by queens. 'Asbestos,' which is found in the mountains of Arcadia, has the colour of iron. *Chrysotile?* 'Aspisatis,' according to Democritus, occurs in Arabia and is of a fiery red colour. *Aspisatis.* § 69. He recommends that sufferers from an enlarged spleen should wear it as an amulet with camel dung. However that may be, he states that it is found in the nests of Arabian birds, and that another stone bearing the same name and found in Arabia on Cape Leucopetra has a darting silvery lustre and is effective in counteracting attacks of wild distraction.[a] The Atizoe, he writes, is found in India and on Mount Acidane in Persis. *Atizoe.* He describes it as shining brightly like silver, as being

magnitudine trium digitorum, ad lenticulae figuram, odoris iucundi necessariam Magis regem constituentibus. Augitis [1] non alia videtur multis esse quam callaina.

Lapis amphidanes alio nomine chrysocolla appellatur, nascens in Indiae parte ubi formicae eruunt aurum, in quo et invenitur auro similis, quadrata
figura. adfirmatur natura eius quae magnetis esse,
148 nisi quod augere quoque aurum traditur. Aphro-
disiaca ex candido rufa est. Apsyctos septenis diebus calorem tenet excalefacta igni, nigra ac ponderosa, distinguentibus eam venis rubentibus. putant prodesse contra frigora. Aegyptillam Iacchus intellegit per album sardae [2] nigraque [3] venis transeuntibus, volgus autem in [4] nigra radice, caerulea facie. nomen a loco.

149 LV. Balanitae duo genera sunt, subviridis et Corinthii aeris similitudine, illa a Copto, haec ab Trogodytica veniens, medias secante flammea vena. Batrachitas quoque Coptos mittit, unam ranae similem colore, alteram et venis,[5] tertiam rubentis [6] e nigro. Baptes, mollis alioqui, odore excellit.

[1] augitis *Mayhoff, ex indice*: augetes B: augetis *Sillig.*
[2] sardae B: sarda *ceteri codd.*
[3] nigraque dh *cod. Poll.*: nigrumque B.
[4] autem in *codd.*: autem *Mayhoff.*
[5] et venis B: ebeni dh.
[6] rubentis (*sc.* coloris) Bdh: rubetis La *Mayhoff. An recte?*

[a] The reading is uncertain. With *rubentis*, understand *coloris* from *colore.*

just over two inches in length with the shape of a lentil and an agreeable scent, and as being indispensable for the Magi at the installation of a king. The 'augitis' is supposed by many to be identical with the 'callaina.' The 'amphidanes' is the stone otherwise known as 'chrysocolla.' It occurs in the region of India where gold is dug up by ants. The stone is found actually in the gold, being similar to gold and having the shape of a cube. Its nature is positively stated to be the same as that of the magnet, except that, according to tradition, it also causes gold to increase. The 'aphrodisiac' stone is red mixed with white. As for the 'apsyctos,' or 'uncooled stone,' it retains its warmth for seven days if it is thoroughly heated in a fire, and is black, heavy and marked with red veins. It is thought to counteract cold. By the 'Aegyptilla,' or 'little Egyptian stone,' Iacchus understands a stone in which the white layer is traversed by bands of carnelian and black, but the term is commonly applied where there is a black ground and an upper layer of blue. It is named after the country where it is found.

Augitis. § 110. *Amphidanes.* *Aphrodisiaca.* *Apsyctos (lignite).* *Aegyptilla (sardonyx and nicolo).*

LV. As to the 'balanites,' or 'acorn-stone,' there are two varieties, of which one is greenish and the other like Corinthian bronze in its colour. The former comes from Coptos and the latter from the Cave-dwellers' country, and both are intersected through the middle by a bright red layer. The 'batrachites,' or 'frog-stone,' also comes from Coptos: one variety has a colour like that of a frog, a second is similar and also has veins, while a third is red mixed with black.[a] The 'baptes,' or 'dipper,' has an exceptionally pleasant scent, but is otherwise an

Balanites. XXXIV. 8. *Batrachites.* *Baptes*

Beli oculus albicans pupillam cingit nigram e medio aureo colore fulgentem et propter speciem sacratissimo Assyriorum deo dicatur.[1] Belum autem aliam, quam sic vocant, in Arbelis nasci Democritus tradit nucis iuglandis magnitudine, vitrea specie.
150 Baroptenus sive baripe, nigra sanguineis et albis nodis, adalligata proicitur veluti portentosa. Botryitis alia nigra est, alia pampinea, incipienti uvae similis. Bostrychitin Zoroastres crinibus mulierum similiorem vocat. Bucardia, bubulo cordi similis, Babylone tantum nascitur. Brontea, capiti testudinum, e tonitribus cadit, ut putant, restinguitque fulmine icta, si credimus. Boloe in Hibero inveniuntur, glaebae similitudine.

151 LVI. Cadmitis eadem est quae ostracitis vocatur, nisi quod hanc caeruleae interdum cingunt bullae. Callais sappirum imitatur candidior et litoroso mari similis. Capnitis quibusdam videtur suum genus habere, pluribus iaspidis fumidae,[2] ut suo loco diximus. Cappadocia et in Phrygia nascitur, ebori similis. Callaicam vocant e turbido callaino. ferunt

[1] dicatur dh *cod. Poll.*: dicatam B *Mayhoff.*
[2] iaspidis fumidae B: spiris fumida L *edd. vett.*

---

[a] Pliny probably meant to write 'Syrians,' both here and in § 160. *Cf.* § 186 and note.
[b] The meaning is uncertain.
[c] Possibly botryoidal haematite.
[d] Perhaps chrysoprase (see p. 225, n. [f]), apparently called by Theophrastus ὄμφαξ (*de Lap.* 30).
[e] There seems to be some confusion. The remark may really apply to *ceramitis* (§ 152): *cf.* § 177, *ostracitis . . . durior ceramitide.*
[f] Or perhaps 'there is a stone called "callaica," which has partly the colour of a clouded "callais."'

ordinary soft stone. The 'Eye of Baal' has a whitish ground surrounding a dark eye which sends out a golden gleam from its midst. Because of its appearance, the stone is consecrated to the holiest god of the Assyrians.[a] There is another 'Baal stone,' as it is called, which, according to Democritus, is found at Arbela and is as large as a walnut, with a glassy appearance. 'Baroptenus,' also known as 'baripe,' is a black stone with blood-red and white nodules. As an amulet it is rejected because it is liable to cause monstrous births.[b] 'Botryitis,' or 'grape-cluster,' occurs in two varieties, of which one is dark[c] and the other has the colour of a vine, and resembles a young grape.[d] 'Bostrychitis' is the name given by Zoroaster to a stone that somewhat resembles the locks of a woman's hair. 'Bucardia,' resembling an ox-heart, is found only at Babylon. 'Brontea,' or 'thunder stone,' which is like the head of a tortoise, is supposed to fall from thunderclaps and to extinguish fires where lightning has struck, or so we are led to believe. The 'bolos,' or 'clod,' is found in the river Ebro and is like a clod of earth.

Beli oculus (eye-agate?). *Belus.* *Baroptenus Baripe.* *Botryitis.* *Bostrychites (moss-agate?).* *Bucardia.* *Brontea.* *Bolos.*

LVI. 'Cadmitis' is identical with the so-called ostracitis,'[e] except that the latter is sometimes surrounded with blue globules. 'Callais' is similar to lapis lazuli, except that its colour is lighter, like that of the sea close inshore. 'Capnitis,' or 'smoke stone,' is regarded by some as a separate variety, but many people treat it as a smoky 'iaspis,' as I have described it in the appropriate place. The 'Stone of Cappadocia' occurs there and in Phrygia, and is like ivory. The 'callaica' is so called from its colour, which is that of a clouded 'callais,'[f] and it is said that

Cadmitis (calamine). *Callais (blue turquoise).* *Capnitis.* § 118. *Cappadocia.* *Callaica (turquoise).*

152 plures coniunctas semper inveniri. Catochitis Cor-
sicae lapis est, ceteris maior et magis mirabilis, si
vera traduntur, inpositam manum veluti cummi
retinens. Catoptritis in Cappadocia provenit candore
imaginem regerens. Cepitis sive cepolatitis candida
est, venarum coeuntibus lineis in unum. Ceramitis
153 testae colorem habet. Cinaediae inveniuntur in
cerebro piscis eiusdem nominis, candidae et oblongae
eventuque mirae, si modo est fides praesagire eas
habitum maris nubili vel tranquilli. Ceritis cerae
similis est, circos accipitri,[1] corsoides canitiae capitis,
coralloachates [2] curalio,[3] aureis guttis distincta, corallis
154 minio; gignitur in India et Syene. Crateritis inter
chrysolithum et electrum colorem habet, praedura
natura. Crocallis ceras [4] repraesentat. Cyitis circa
Copton nascitur candida et videtur intus habere
partum, qui sentiatur etiam crepitu. Chalcophonos
nigra est, sed inlisa aeris tinnitum reddit, tragoedis,
155 ut suadent, gestanda. Chelidoniae duorum sunt
generum, hirundinum colore, ex altera parte pur-

[1] accipitri *Hardouin*: acapitri d: tribus circulis B.
[2] coralloachates B *Sillig*: corallachates *Mayhoff*. *Sed* coralloachates *in indice*. *Fortasse tamen* coralliachates.
[3] curalio *Mayhoff*; *cf. XXXII. 21–22*: curallio B[1]: corallio L.
[4] ceras BFL: cerasum dh *Sillig*.

[a] Perhaps otoliths found in the head of the basse (Aelian, *de Nat. Animalium* IX. 7).

several of these stones are always found joined together. The 'catochitis,' or 'clinging stone,' belongs to Corsica and is larger than other precious stones, and more remarkable, if the reports are true, because, if the hand rests on it the stone sticks to it like gum. The 'catoptritis,' or 'mirror-stone,' which occurs in Cappadocia, reflects images from its bright colourless surface. The 'cepitis,' also known as 'cepolatitis,' is white, with lines of veins that meet at a single point. The 'ceramitis,' or 'pottery-stone,' has the colour of earthenware. 'Cinaediae,' or 'cinaedus stones,' are white, oblong stones [a] found in the brain of the fish so named. They have a remarkable effect if only we can believe the statement that they predict conditions at sea, foretelling mist or calm as the case may be. 'Ceritis' reminds us of wax, 'circos' of a hawk, 'corsoides' of grey hair, and 'coralloachates,' or 'coral-agate,' of coral. This has markings like drops of gold. The 'corallis' resembles vermilion, and occurs in India and at Aswan. The 'crateritis,' or 'strong stone,' has a colour between that of yellow sapphire and of amber, and is very hard. The 'crocallis' reproduces exactly the appearance of the cells of a honey-comb. 'Cyitis,' or 'pregnant stone,' which is found in the neighbourhood of Coptos, is white and seems to be pregnant with another stone, the presence of which is in fact perceived by a rattling sound. The 'chalcophonos,' or 'brazen-voiced stone,' which is black, rings like bronze when it is dashed against anything; and actors of tragedies are urged to wear it. As to 'chelidoniae,' or 'swallow-stones,' there are two varieties, both of which are swallow-coloured with

Catochitis (bitumen?).
Catoptritis.
Cepitis, Cepolatitis.
Ceramitis.
Cinaedia.
Ceritis, etc.
Corallis (red jasper?).
Crateritis.
Crocallis
Cyitis (geode).
Chalcophonos.
Chelidonia. XI. 203.

pureae, in alia[1] purpuram nigris interpellantibus maculis. Chelonia oculus est Indicae testudinis, vel portentosissima Magorum mendaciis. melle enim colluto ore inpositam linguae futurorum divinationem praestare promittunt xv luna et silente toto die, decrescente[2] vero ante ortum solis, ceteris diebus a prima in sextam horam. Sunt et chelonitides aliarum[3] testudinum superiori[4] similes, ex quibus ad tempestates sedandas multa vaticinantur, eam vero quae ex iis aureis guttis aspersa sit cum scarabaeo deiectam in aquam ferventem tempestates com-
156 movere. Chloritis herbacei coloris est; eam in ventre motacillae avis inveniri dicunt Magi congenitam ei et ferro includi iubent ad quaedam prodigiosa moris sui. Choaspitis a flumine dicta est, ex viridi fulgoris aurei. Chrysolampis[5] in Aethiopia nascitur, pallida alias, sed noctu ignea. Chrysopis aurum videtur esse. Cetionides[6] in Aeolide nunc Atarneo pago, quondam oppido, nascuntur, multis coloribus tralucentes, alias vitreae, alias crystallinae,

[1] in alia purpuram *Mayhoff*: et (*om.* B) alia in purpura B *Sillig*.
[2] decrescente *cod. Poll.*: crescente B.
[3] aliarum B: *om. ceteri codd.*
[4] superiori B: superficiei *Mayhoff*: *om. ceteri codd.*
[5] chrysolampis *Sillig*; *cf. indicem*: chrysolampsis L *Mayhoff*.
[6] cetionides B: ceponides dh.

[a] Understand *oculi* from *oculus* above (*Chelonia oculus . . . testudinis*).

purple on one side, but in one variety the purple is interspersed with black markings. The 'chelonia,' 'tortoise-stone,' is the eye of the Indian tortoise and, according to the false allegations of the Magi, is the most miraculous of all stones. For they claim that the stone, if it is placed on the tongue after the mouth has been rinsed with honey, confers powers of prophecy—at full moon or new moon, during the whole of the day; when the moon is waning, before sunrise only; and at other times, from dawn to midday. There are also tortoise-stones which are the eyes[a] of other tortoises and resemble the tortoise-stone previously mentioned; and according to their guidance the Magi often pronounce prophetic incantations in order to cause storms to subside. The variety, however, that is sprinkled with gold drops is said by them to generate storms if it is dropped into boiling water with a scarab beetle. The 'chloritis,' or 'greenstone,' which is of a grassy colour, is said by the Magi to be found as a congenital growth in the crop of the water-wagtail. They recommend that it should be set in an iron bezel so as to produce certain of their all too familiar miracles. The 'choaspitis,' which is named after the river Choaspes,[b] is of a brilliant gold colour mixed with green. The 'chrysolampis,' or 'golden gleam,' which is found in Ethiopia, is generally pale, but fiery by night. The 'chrysopis,' or 'golden face,' looks just like gold. The 'Cetionis'[c] is found in Aeolis at Atarneus, now a village, but once a town. It is a transparent stone of many colours. The hue is some-

Chelonia. *Chelonis.* *Chloritis.* *Choaspitis.* *Chrysolampis.* *Chrysopis.* *Cetionis.*

[b] In Susiana (S.E. Mesopotamia).
[c] Perhaps named after the River Cetius (V. 126).

alias iaspidis,[1] sed et sordidis tantus est nitor ut imagines reddant ceu specula.

157 LVII. Daphnean Zoroastres morbis comitialibus demonstrat. Diadochos berullo similis est. Diphyes duplex, candida ac nigra, mas ac femina, genitale utriusque sexus [2] distinguente linea. Dionysias, nigra ac dura, mixtis rubentibus maculis, ex aqua trita saporem vini facit et ebrietati resistere putatur.

158 Draconitis sive dracontias e cerebro fit draconum, sed nisi viventibus absciso capite non gemmescit invidia animalis mori se sentientis. igitur dormientibus amputant.[3] Sotacus, qui visam eam gemmam sibi apud regem scripsit, bigis vehi quaerentes tradit et viso dracone spargere somni medicamenta atque ita sopitis [4] praecidere. esse candore tralucido, nec postea poliri aut artem admittere.

159 LVIII. Encardia cognominatur enaristera,[5] in nigro colore effigie cordis eminente; altera eodem

[1] iaspidis La: iaspideae dh *edd. vett.*
[2] sexus dh *cod. Poll.*: *om.* B.
[3] igitur dormientibus amputant *om.* B: *in uncis ponit Mayhoff.*
[4] sopitis *Sillig e coni. Iani*: opitis B[1]: caput his B[2]: *om. ceteri codd.*: sopiti *Mayhoff*. *An* caput eius?
[5] enaristera *ego* (*vide Liddell & Scott*[9], *p. 2068*): enhariste L: enariste *Mayhoff* (*sed de hoc vocabulo dubitandum est*): et ariste Fdh *Sillig.*

---

[a] Plain monochrome glass that is earlier than the 2nd century A.D. usually shows a greenish or blue-green tinge.
[b] *I.e.*, because the heart is on the left side of the diaphragm; but the reading is uncertain.

times that of glass,[a] sometimes of rock-crystal and sometimes of 'iaspis,' but even the stones with flaws in them have so brilliant a lustre that they reflect an image as if they were mirrors. § 115.

LVII. The 'daphnea,' or 'laurel stone,' is prescribed by Zoroaster as a cure for epilepsy. The 'diadochos,' or 'substitute,' resembles beryl. The 'diphyes' is a stone of twofold character. It is subdivided into a black and a white, a male and a female variety, each of the two varieties bearing an outline that distinctively portrays the organ of its sex. The 'Dionysias,' or 'stone of Dionysus,' a hard stone, the colour of which is black intermingled with red spots, produces the flavour of wine when it is ground to powder and mixed with water, and is supposed to be an antidote to drunkenness. The 'draconitis,' otherwise known as 'dracontias,' the 'snake stone,' is obtained from the brains of snakes, but unless the head is cut off from a live snake, the substance fails to turn into a gem, owing to the spite of the creature as it perceives that it is doomed. Consequently, the beast's head is lopped off while it is asleep. Sotacus, who writes that he saw such a gem in the possession of a king, states that those who go in search of it ride in two-horsed chariots, and that when they see the snake they scatter sleeping-drugs and so put it to sleep before they cut off its head. According to him, the stone is colourless and transparent, and cannot subsequently be polished or submitted to any other skilful process.

Daphnea. *Diadochos.* *Diphyes.* *Dionysias.* *Draconitis, Dracontias.*

LVIII. The 'encardia,' or 'heart stone,' has been given the epithet 'enaristera,' or 'left-side,'[b] and shows the likeness of a heart in high relief on a black

Encardia.

nomine viridi colore cordis speciem,[1] tertia nigrum cor ostendit, reliqua sui parte candida. Enorchis candida est divisisque fragmentis testium effigiem repraesentat. Exhebenum Zoroastres speciosam et candidam tradit, qua aurifices aurum poliant.
160 Erythallis, cum sit candida, ad inclinationes rubescere videtur. Erotylos sive amphicomos sive [2] hieromnemon Democrito laudatur in argumentis divinationum. Eumeces in Bactris nascitur, silici similis, et capiti supposita visa nocturna oraculi modo reddit. Eumitren Beli gemmam, sanctissimi deorum sui,[3] Assyrii observant,[4] porracei coloris, superstitionibus
161 gratam. Eupetalos quattuor colores habet, caeruleum, igneum, minii, mali. Eureos nucleo olivae similis est, striata concharum modo, non adeo candida. Eurotias situ videtur operire nigritiam. Eusebes ex eo lapide est quo traditur in Tyro Herculis templo facta sedes, ex qua pii facile surgebant. Epimelas fit, cum candida gemma superne nigricat.
162 LIX. Galaxian aliqui galactiten vocant, similem proxime dictis, sed intercurrentibus sanguineis aut

[1] speciem *Ianus*: specie B: speciem repraesentat in *ceteri codd.* (in *del. edd. vett.*).
[2] erotylos sive . . . sive B: erotylos, eadem quae . . . et L *edd. vett.*
[3] sui *Mayhoff*: sibi FL *edd. vett.*: ut B.
[4] observant B: appellant *ceteri codd.*

---

[a] Here, as so often in this alphabetical list, it is impossible to decide whether *condidus* means 'bright white' or 'brilliantly colourless.'
[b] Lit. 'with hair all round.'
[c] Lit. 'a recorder of religious matters.'

ground. Another variety bearing the same name displays the likeness of a heart in green, and a third in black, the rest of the stone being white. The 'enorchis' is white,[a] and when it is split up into *Enorchis.* pieces reproduces exactly the shape of the testicles. 'Exhebenus' is, according to Zoroaster, a handsome *Exhebenus.* white stone which goldsmiths use for polishing gold. 'Erythallis,' although it is white, looks red when it *Erythallis.* is tilted. The 'erotylos,' or 'love stone,' otherwise *Erotylos.* known as 'amphicomos'[b] and 'hieromnemon,'[c] is praised by Democritus in virtue of its use in prophecy. The 'eumeces,' or 'tall stone,' which is found in *Eumeces.* Bactria, resembles hard limestone, and, when it is XXXVI. 171. placed beneath the head like a pillow, produces dreams that have the force of an oracle. The 'eumitres,' or 'fine head-dress,' is held in high regard by the *Eumitres (amazon stone?).* Assyrians as the jewel of Baal, the most holy of their gods. Its colour is that of the leek, and it is much favoured in religious observances. The 'eupetalos,' *Eupetalos.* or 'leafy stone,' has four colours, blue, fiery red, vermilion, and apple-green. 'Eureos,' which is *Eureos.* shaped like an olive stone, is fluted like a sea-shell, but is not so white. 'Eurotias,' or 'mouldy stone,' *Eurotias.* looks as if its black surface were covered with mildew. 'Eusebes,' or 'reverent stone,' is the kind of stone of *Eusebes.* which a seat in the temple of Hercules at Tyre is said to have been made, this seat being the one from which only the pious could rise without difficulty. 'Epimelas,' or 'black-on-top,' is an instance of a white *Epimelas (onyx?).* gemstone that is overlaid with black.

LIX. 'Galaxias,' or 'milk stone,' which is some- *Galaxias.* times known as 'galactites,' is similar to the stones next mentioned, but is traversed by blood-red or

candidis venis. Galactitis ex uno colore lactis est. eandem leucogaeam et leucographitim appellant et synechitim, in attritu lactis suco ac sapore notabilem, in educatione nutricibus lactis fecundam.[1] infantium quoque collo adalligata salivam facere traditur, in ore autem liquescere, eadem memoriam adimere.[2] mittunt eam Nilus et Achelous amnes. sunt qui smaragdum albis venis circumligatum galactiten
163 vocent. Gallaica argyrodamanti similis est, paulo sordidior; inveniuntur iunctae binae ternaeque. Gassinnaden Medi mittunt, coloris orobini, veluti floribus sparsam; nascitur et in Arbelis. haec quoque gemma concipere dicitur et intra se partum fateri concussa, concipere autem trimenstri spatio.
164 Glossopetra, linguae similis humanae, in terra non nasci dicitur, sed deficiente luna caelo decidere, selenomantiae necessaria. quod ne credamus,[3] promissi quoque vanitas facit[4]; ventos enim ea comprimi narrant. Gorgonia nihil aliud est quam curalium. nominis causa, quod in duritiam lapidis mutatur emollitum in mari. hanc fulminibus et typhoni[5]

[1] fecundam BFh: fecunda *Sillig.*
[2] eadem (eandem B[1]) memoriam adimere B: eandem memoriam adimere dicunt dh *edd. vett.*
[3] credamus dh *cod. Poll.*: crederemus B.
[4] facit dh *cod. Poll.*: fecit B.
[5] fulminibus et typhoni L: fascinationibus B.

Galactitis (chalk?).

white streaks. 'Galactitis' is entirely milk-white, and is known also as 'leucogaea' ('white earth'), 'leucographitis' ('white chalk'), and 'synechitis' ('cohesive earth'). It is noteworthy for the fact that when rubbed between the fingers it exhibits a milky smear and flavour, and in the rearing of children it ensures wet-nurses a plentiful flow of milk. Moreover, when it is tied to the necks of babies as an amulet, it is said to make their saliva flow, but we are told that when placed in the mouth it melts and also causes loss of memory. Two rivers, the Nile and the Achelous, produce this substance. Some people apply the term 'galactites' to a 'smaragdus' that is banded with white streaks.

Plasma.

Gallaica (pyrites?).

'Gallaica' is similar to 'argyrodamas,' but is somewhat less pure. Two or three stones are found joined together.

Gassinnades (geode).

The 'gassinnades,' which comes from Media, has the colour of wild vetch and looks as if it were sprinkled with flowers. It is found also at Arbela. This is yet another gem that is said to conceive, and to betray the presence of the stone in its womb if it is shaken. The 'embryo,' we are told, takes three months to develop.

§ 154.

Glossopetra.

'Glossopetra,' or 'tongue stone,' which resembles the human tongue, does not, we are told, form in the ground, but falls from the sky during the waning of the moon, and is indispensable to the moon-diviner. Our scepticism with regard to this account is reinforced by the falseness of the claim made for the stone; for it is stated that it checks gales.

Gorgonia.

The 'Gorgonia,' or 'Gorgon's stone,' is merely coral. The reason for its name is that it is transformed into the hardness of stone after being softened in the sea. It is said to keep off thunderbolts and whirlwinds.

resistere adfirmant. Goniaeam eadem vanitate
inimicorum poenas efficere promittunt.
165 LX. Heliotropium nascitur in Aethiopia, Africa,
Cypro, porraceo colore, sanguineis venis distincta.
causa nominis, quoniam deiecta in vas aquae ful-
gorem [1] solis accidentem [2] repercussu sanguineo
mutat,[3] maxime Aethiopica. eadem extra aquam
speculi modo solem accipit deprenditque defectus,
subeuntem lunam ostendens. Magorum inpudentiae
vel manifestissimum in hac quoque exemplum est,
quoniam admixta herba heliotropio, quibusdam
additis precationibus,[4] gerentem conspici negent.
166 Hephaestitis quoque speculi naturam habet in red-
dendis imaginibus, quamquam rutila. experi-
mentum est, si statim addita fervens aqua refri-
gerata [5] sit aut si in sole adposita aridam materiam
statim accendat. nascitur in Coryco. Hermu
aedoeon ex argumento virilitatis in candida gemma
vel nigra aliquando vel [6] pallida, ambiente circulo
167 coloris aurei, appellatur. Hexecontalithos, in parva
magnitudine multicolor—hoc sibi nomen adoptavit [7]

[1] fulgorem *aliquot codd., edd. vett.*: fulgore dh *Mayhoff.*

[2] accidentem *Ianus*: accedentem L *edd. vett.*: accidente Ba *Mayhoff.*

[3] mutat L *edd. vett.*: mutat eum *Mayhoff*: mutatur B: *om. ceteri codd.*

[4] precationibus FLa: praecantationibus dh: *om.* B.

[5] statim addita fervens aqua refrigerata sit B: ferventem aquam addita statim refrigeret *Sillig ex* Fadh.

[6] aliquando vel B: aliquando adh: aliquando et *Mayhoff.*

[7] hoc sibi nomen adoptavit *in uncis ponit Mayhoff.*

---

[a] Possibly 'as it approaches the sun's disc.'

[b] Or possibly 'dry timber.'

[c] In Cilicia.

Goniaea.

The 'goniaea,' or 'faceted stone,' is guaranteed just as falsely to bring about the punishment of one's private enemies.

Heliotropium (bloodstone): cf. § 113.

LX. The heliotrope, which is found in Ethiopia, Africa and Cyprus, is leek-green in colour, but is marked with blood-red streaks. The name is explained by the fact that, when the stone is dropped into a vessel of water and bright sunshine falls upon it, in reflecting the sunlight it changes it into the colour of blood. This is true especially of the Ethiopian variety. When it is out of water, the same stone catches the sunlight like a mirror and detects solar eclipses, showing the passage of the moon below the sun's disc.[a] Here, moreover, we have quite the most blatant instance of effrontery on the part of the Magi, who say that when the heliotrope plant is joined to the stone and certain prayers are pronounced over them the wearer is rendered invisible.

Hephaestitis.

The 'Hephaestitis,' or 'Hephaestus stone,' is another that acts like a mirror in reflecting images, even though it is red. The test of its genuineness is that boiling water when poured over it should cool immediately; or, alternatively, that when placed in the sun it should immediately set fire to a parched substance.[b] The stone is found at Corycus.[c]

Hermu aedoeon.

The Hermu aedoeon,' or 'sexual organ of Hermes,' is so called from its resemblance to the male organ, the gemstone on which the likeness appears being white or sometimes black, or pale yellow, and surrounded by a circular band of golden yellow.

Hexecontalithos (opal?).

The 'hexecontalithos,' or 'sixty-stones-in-one,' contains many colours in a small compass, and so has appropriated its name. It is found in the Cave-dwellers'

—reperitur in Trogodytice. Hieracitis alternat tota miluinis nigrisque veluti plumis. Hammitis ovis piscium similis est, et alia velut e nitro composita, praedura alioqui. Hammonis cornu inter sacratissimas Aethiopiae,[1] aureo colore arietini cornus effigiem reddens, promittitur praedivina somnia
168 repraesentare. Hormiscion inter gratissimas aspicitur ex igneo colore radians auro portante secum in extremitatibus candidam lucem.[2] Hyaeniae ex oculis hyaenae et ob id invasae[3] inveniri dicuntur et, si credimus, linguae hominis subditae[4] futura
169 praecinere. Haematitis in Aethiopia quidem principalis est, sed et in Arabia et in Africa invenitur, sanguineo colore, non omittendis[5] promissis ad coarguendas Magorum[6] insidias. Zachalias Babylonius in iis[7] libris quos scripsit ad regem Mithridatem gemmis humana fata adtribuens hanc, non

[1] Aethiopiae B: Aethiopiae gemmas dh *edd. vett.*
[2] portante . . . lucem La *fortasse ex Isid. XVI.14.11*: *om.* BFdh: *in uncis ponit Mayhoff.*
[3] et ob id invasae dh: lapides . . . *Mayhoff*: tabido in vase L: *om.* B.
[4] subditae L: subditi BF *Mayhoff.*
[5] omittendis *Detlefsen* (*e lect. marg. Dalecampii*); *cf. XXXVI.106*: omittenda BFdha.
[6] Magorum B: barbarorum *aliquot codd., edd. vett.*
[7] iis *Mayhoff*: his *codd.*

---

[a] See the *apparatus*: *ex oculis inveniri*, 'be obtained from the eyes,' is an unnatural construction, but perhaps not too bold for Pliny.
[b] Most manuscripts read *barbarorum*, *i.e.*, 'the claims

country. The 'hieracitis,' or 'kite stone,' is entirely *Hieracitis.* covered with feathery scales, black ones alternating with others resembling a kite's feathers. 'Hammitis,' *Hammitis.* or 'sandy stone,' resembles fish roe, and there is another kind that looks as if it were composed of soda, but is otherwise just a very hard stone. 'Hammonis cornu,' *Hammonis cornu (ammonite).* or 'horn of Ammon,' which is among the most sacred stones of Ethiopia, has a golden yellow colour and is shaped like a ram's horn. The stone is guaranteed to ensure without fail dreams that will come true. The 'hormiscion,' or 'necklace *Hormiscion.* stone,' which in its appearance is among the most pleasing of gemstones, reflects beams of gold from a fiery red ground, and these gold beams carry a white gleam at their tips. 'Hyaeniae,' or 'hyena stones,' *Hyaenia.* are, it is said, obtained from the eyes of the hyena,[a] which is actually attacked for the purpose. When the stones are placed under a man's tongue, they are alleged to foretell the future, if we are foolish enough to believe such a thing. 'Haematitis' of the *Haematitis (red jasper and haematite).* finest quality occurs in Ethiopia, but the stone is found also both in Arabia and in Africa. It is blood-red in colour. We must not omit to mention the claims made for it, so that we may expose the treacherous frauds perpetrated by the Magi.[b] Zachalias of Babylon, in the volumes which he dedicates to King Mithridates, attributes man's destiny to the influence of precious stones; and as for the 'haematitis,' he

made for it, that it detects the plots of barbarians.' The reading of B, *Magorum*, is preferable because the phrasing of the next sentence strongly suggests that no individual claims have been mentioned before those attributed to Zachalias. Moreover, Pliny continually attacks the Magi.

contentus oculorum et iocineris medicina decorasse, a rege etiam aliquid petituris dedit, eandem litibus iudiciisque interposuit, in proeliis etiam ex ea ungui [1] salutare pronuntiavit. est et alia eiusdem generis, quae vocatur menui, ab aliis [2] xuthos.[3] ita appellant Graeci e fulvo candicantes.[4]

170 LXI. Idaei dactyli in Creta ferreo colore pollicem humanum exprimunt. Icterias cuti mali [5] luridae similis et ideo salubris existimata contra regios morbos. est et alia eodem nomine lividior, tertia folio similis, prioribus latior et paene sine pondere, venis luridis, quartum genus in eodem colore nigriore luridis venis discurrentibus. Iovis gemma candida est, non ponderosa, tenera. hanc et drosolithon appellant. Indicae gentium suarum habent nomen, subrufo colore, sed in attritu purpureo sudore manant. alia eodem nomine candida, pulvereo aspectu. Ion apud Indos violacea est; rarum ut saturo colore luceat.

[1] ex ea ungui (ungi dh) salutare Fdh: exangui salutarem *Mayhoff*: exangui salutare B.

[2] ab aliis *cod. Poll.*: ab Indis dh *edd. vett.*

[3] xuthos d; cf. § 128: authos *aut* auchos *aut* xithos *ceteri codd.*: xanthos *edd. vett. ex Theophr. de Lap. 37.*

[4] appellant Graeci e (in B) fulvo candicantes *Mayhoff* (Greci vocant FL, Graeci *om.* B): appellata a Graecis, e fulvo candicans dh.

[5] cuti mali *Mayhoff*: mali cute Fdh: cuti B.

[a] If the reading is correct, this statement must apply to haematite.

is not content to credit it with curing diseases of the eyes and liver, but places it even in the hands of petitioners to the king, allows it to interfere in lawsuits and trials, and proclaims also that to be smeared with an ointment containing it is beneficial in battle.[a] There is another stone of the same kind which is sometimes called 'menui,' and sometimes 'xuthos,' or 'brownish-yellow' stone. This is the name given by the Greeks to stones that are light brown.

Limonite or yellow jasper.

LXI. 'Idaei dactyli,' or 'Fingers of Ida,'[b] have the colour of iron and reproduce the shape of the human thumb. The 'icterias,' or 'jaundice stone,' is like the yellow skin of an apple, and is therefore considered to be beneficial in treating jaundice. There is also another stone of the same name, but of a more leaden colour. A third, resembling a leaf and flatter than the former varieties, is almost without weight and has dull yellow streaks. A fourth kind has dull yellow streaks spreading over a ground of a similar colour, but darker. 'Iovis gemma,' or 'Jupiter's gem,' is white, light in weight, and soft. It is known also as 'drosolithos,' or 'dew stone.' The 'Indica,' or 'Indian stone,' takes the name of its country of origin and is of a reddish hue, but when rubbed between the fingers exudes a purple liquid. Another stone of the same name is colourless and has a dusty appearance. The 'ion,' or 'violet stone,' is a violet-coloured stone found in India, but only rarely is its colour bright and deep.

Idaei dactyli. *Icterias.* *Iovis gemma (meerschaum?).* *Indica.* *Ion.*

[b] The 'Idaei dactyli' were mythical metal-workers. The name may refer to their small size. The stones so called may have been belemnites, cylindrical and largely solid fossils which terminate in a point (S. H. Ball, *op. cit.*, p. 183).

171 LXII. Lepidotis squamas piscium variis coloribus imitatur, Lesbias glaebas,[1] patriae habens nomen; invenitur tamen et in India. Leucophthalmos, rutila alias, oculi speciem candidam nigramque continet. Leucopoecilos candorem minii guttis [2] ex auro distinguit. Libanochrus turis similitudinem ostendit
172 et mellis sucum. Limoniatis eadem videtur quae smaragdos. De liparea hoc tantum traditur, suffita ea omnes bestias evocari. Lysimachos, Rhodio marmori similis auratis venis, politur ex maiore amplitudine in angustias ut inutilia exterantur. Leucochrysos fit e chrysolitho interalbicante.

173 LXIII. Memnonia qualis sit, non traditur. Media nigra est, ab Media illa fabulosa inventa; habet venas aurei coloris, sudorem reddit croci, saporem vini. Meconitis papavera exprimit. Mithrax e Persis venit et Rubri maris montibus, multicolor ac contra solem varie refulgens. Morochthos, colore porracea, lacte sudat. Mormorion ab India niger-

[1] glaebas B: Lesbi d *edd. vett.* (*vocabulo* patriae *apposito*).
[2] minii guttis B: nivis L *edd. vett.*: nivis guttis *Detlefsen.*

---

[a] Less probably 'a liquid like honey.'
[b] Usually spelt 'Medea.' A *Median* stone makes no sense here.
[c] Or 'produces a saffron-yellow streak.'

LXII. The 'lepidotis,' or 'scaly stone,' mimics fish scales in various colours, while the 'Lesbias,' or 'stone of Lesbos,' resembles a clod of earth. It takes its name from its country of origin, but is found also in India. The 'leucophthalmos,' or 'white eye,' which is otherwise reddish, includes an eye-shaped layer which is white and black. The 'leucopoecilos,' or 'variegated white stone,' has a white ground marked with drops of vermilion mixed with gold. The 'libanochrus,' or 'colour-of-incense,' shows a resemblance to frankincense and gives off a honey-coloured streak.[a] The 'limoniatis,' or 'meadow stone,' seems to be identical with the 'smaragdus.' As for the 'liparea,' the only fact that is reported is that, when it is burnt, all beasts are flushed from their hiding-places by its fumes. The 'lysimachos' is similar to Rhodian marble with golden-yellow veins, and has to be considerably reduced in size by polishing so that its superfluous excrescences may be smoothed away. The 'leucochrysos,' or 'golden-white stone,' consists of a 'chrysolithos' interspersed with white.

Lepidotis. Lesbias. Leucophthalmos (eye agate?) Leucopoecilos. Libanochrus. Limoniatis. Liparea. Lysimachos. Leucochrysos. § 126.

LXIII. No description of the 'Memnonia,' or 'stone of Memnon,' exists. As for the 'Media,' a black stone found by the Media [b] who is so famous in legend, it has veins of a golden-yellow colour, exudes saffron-yellow moisture [c] and reproduces the flavour of wine. The 'meconitis,' or 'poppy stone,' closely resembles the poppy. 'Mithrax' comes from Persia and the mountains of the Persian Gulf. It is a stone of many colours and reflects their changing tints in sunlight. 'Morochthos' is leek-green in colour and exudes milky moisture. 'Mormorion,' a very dark translucent stone from India, is

Memnonia. Media. Meconitis. Mithrax (opal?). Morochthos. Mormorion (orange-brown zircon?).

rimo colore tralucet, vocatur et promnion, cum in ea miscetur et carbunculi color, Alexandrion,[1] ubi vero[2] sardae, Cyprium. nascitur et in Tyro et in Galatia; Xenocrates et sub Alpibus nasci tradit. hae sunt gemmae quae ad ectypas scalpturas aptantur.

174 Myrrhitis[3] murrae colorem habet faciemque minime gemmae, odorem unguenti, attrita etiam nardi. Myrmecias nigra habet eminentias[4] similis[5] verrucis, myrsinitis melleum colorem, odorem myrti. Mesoleucos est[6] mediam gemmam candido distinguente limbo, mesomelas nigra vena quemlibet colorem secante per medium.

175 LXIV. Nasamonitis sanguinea est nigris venis. Nebritis, Libero patri sacra, nomen traxit a nebridum similitudine; alba e[7] nigro[8] generis eiusdem. Nipparene urbis et gentis Persicae habet nomen, similis hippopotami dentibus.

176 LXV. Oica barbari nominis e nigro et fulvo viridique et candido placet. Ombria, quam alii notiam vocant, sicut et ceraunia et brontea, cadere cum imbribus et fulminibus dicitur eundemque effectum

[1] Alexandrion B: Alexandrinum dh.
[2] ubi vero *Detlefsen*: vero ubi B: ubi *ceteri codd.*
[3] myrrhitis *Ianus*: myritis FL: miritis Ba: murritis *Sillig.*
[4] eminentias L: eminentia BF *Mayhoff.*
[5] similis *codd.*: similia *Mayhoff.*
[6] est *codd.*: fit *Mayhoff.*
[7] alba e *Detlefsen*: albe B: et aliae F: alia e *Mayhoff*: et alia dh: est et alia *Sillig.*
[8] nigro BF: nigra dh *Sillig.*

[a] Or possibly 'under the ranges of the Alps.'

also known as 'promnion'; but it is called 'Alexandrion,' or 'Alexander stone,' when the colour of garnet is mingled with it, and 'Cyprium,' when that of carnelian is present. It is found also at Tyre and in Galatia and, according to Xenocrates, occurs as well close to the Alps.[a] These are gems which are eminently suitable for cameo-engraving. The 'myrrhitis,' or 'myrrh stone,' has the colour of myrrh and an appearance quite unlike that of a gemstone. It smells like an unguent and, when rubbed, even like spikenard. The black 'myrmecias,' or 'wart stone,' has excrescences like warts, while the 'myrsinitis,' or 'myrtle stone,' is honey-coloured and has the scent of myrtle. A stone is 'mesoleucos,' or 'white in the middle,' when a white band marks the middle of the gem; and is 'mesomelas,' or 'black in the middle,' when a black layer intersects a gem of any colour in the middle. *Myrrhitis.* *Myrmecias.* *Myrsinitis.* *Mesoleucos.* *Mesomelas*

LXIV. The 'Nasamonitis,' or 'stone of the Nasamones,' is blood-red with black veins. The 'nebritis,' or 'fawn stone,' which is sacred to Father Liber, derives its name from its resemblance to a fawnskin, but there is another stone of the same kind that is black and white. 'Nipparene,' which gets its name from a city and tribe of Persia, is like the tooth of a hippopotamus. *Nasamonitis* (*cf.* § 104). *Nebritis.* *Nipparene.*

LXV. The stone that bears the foreign name 'oica' is a pleasing mixture of black, reddish-brown, green and white. The 'ombria' ('rain stone'), otherwise known as 'notia' ('south-wind stone'), is said to fall, like the 'ceraunia' and the 'brontea,' in company with heavy rain and thunderbolts, and to have the same properties as these stones. But in *Oica.* *Ombria.* §§ 135, 150.

habere; praeterea hac in aras addita libamenta non amburi. Onocardia cocco similis est, neque aliud de ea traditur. Oritis globosa specie a quibusdam et
177 sideritis vocatur, ignes non sentiens. Ostracias sive ostracitis est testacea, durior ceramitide, achatae similis, nisi quod illa politura pinguescit. huic tanta duritia inest ut fragmentis eius aliae gemmae scalpantur. Ostritidi ostrea a similitudine nomen dedere. Ophicardelon barbari vocant, nigrum colorem binis lineis albis includentibus. De opsiano lapide diximus priore [1] libro. inveniuntur et gemmae eodem nomine ac colore non solum in Aethiopia Indiaque, sed etiam in Samnio et, ut aliqui putant, in Hispania litoribus eius oceani.

178 LXVI. Panchrus fere ex omnibus coloribus constat. Pangonus non longior digito, ne crystallus videatur, numero plurium angulorum facit. Paneros qualis sit, a Metrodoro non dicitur, sed carmen Timaridis reginae in eam, dicatum Veneri, non inelegans ponit, ex quo intellegitur adiutam [2] fecunditatem. hanc quidam paneraston vocant.
179 Ponticarum plura sunt genera: est stellata nunc

[1] priore BF: superiore dh.
[2] adiutam BF: additam ei L.

---

[a] See p. 331, n. [c].
[b] Strangely enough, these, according to Pliny, are the regions that produce obsidian. This is not the only instance where he uses the same material in two different contexts.

addition, so we are told, it prevents offerings from being burnt away if it is placed on an altar. 'Onocardia,' or 'ass's heart,' is like the scarlet kermes-insect [a] in colour, but we are told nothing further. 'Oritis,' or 'mountain stone,' sometimes known also as 'sideritis,' 'iron stone,' is spherical in shape and not affected by fire. 'Ostracias,' or 'sherd stone,' otherwise known as 'ostracitis,' resembles earthenware, but is harder than 'ceramitis.' It is like agate except that the latter has a greasy appearance when it has been polished. This 'ostracias' is so hard that other gemstones are engraved with pieces of it. The 'ostritis,' or 'oyster stone,' owes its name to its resemblance to an oyster-shell. 'Ophicardelos' is the foreign name for a black stone that is encircled by two white bands. Obsidian has already been discussed by me in an earlier book. There are also found gems bearing this same name and colour not merely in Ethiopia and India but also in Samnium and, as some people think, in Spain on the shores of the Atlantic.[b]

Onocardia. *Oritis.* *Ostracias (flint or hornstone?).* § 152. *Ostritis.* *Ophicardelos.* XXXVI. 196–7.

LXVI. The 'panchrus,' or 'stone of all colours,' is composed of almost every colour. 'Pangonus,' or 'all-angles,' is no longer than a finger, and it is only its more numerous plane faces that prevent it from being taken for rock-crystal. As for the 'paneros,' or 'all-love,' Metrodorus does not describe it, but he cites quite a tasteful poem on the stone composed by Queen Timaris and dedicated to Venus. In this poem it is implied that the stone helped her to bear children. Some people call it 'panerastos,' or 'loved-by-all.' The Pontic stone occurs in several varieties. It is spangled sometimes with blood-red, sometimes

Panchrus (opal?). *Pangonus.* *Paneros.* § 35. *Pontica.*

sanguineis, nunc auratis guttis, quae inter sacras habetur. alia pro stellis eiusdem coloris lineas habet, alia montium convalliumque effigies. Phloginos, quam et chrysitim vocant, ochrae Atticae adsimulata,
180 invenitur in Aegypto. Phoenicitis ex balani similitudine appellatur, phycitis algae. Perileucos fit ab oris gemmae ad radicem usque albo descendente. Paeanitides, quas quidam gaeanidas vocant, praegnantes fieri et parere dicuntur mederique parturientibus. natales[1] iis in Macedonia iuxta monimentum Tiresiae, species aquae glaciatae.

181 LXVII. Solis gemma candida est, ad speciem sideris in orbem fulgentis spargens radios. Sagdam Chaldaei vocant et adhaerentem, ut ferunt, navibus inveniunt, prasini coloris. Samothraca insula dat sui nominis, nigram ac sine pondere, similem ligno. Sauritim in ventre viridis lacertae harundine dissecto inveniri tradunt. Sarcitis bubulas carnes repraesentat. Selenitis ex candido tralucet melleo fulgore imaginem lunae continens, redditque ea in dies singulos crescentis minuentisque sideris speciem, si

[1] natales *edd. vett.*: natalis B *Mayhoff*.

[a] Or possibly 'is a brilliant transparent stone which is colourless to honey-coloured.'

with golden spots, and is regarded as a supernatural object. One variety has, instead of stars, similarly coloured lines, and another, figures recalling mountains and deep valleys. The 'phloginos,' or 'flame-coloured stone,' which is also known as 'chrysitis,' or 'gold stone,' resembles the yellow ochre of Attica and is found in Egypt. The 'phoenicitis,' or 'date-palm stone,' is so called from its resemblance to a date, and the 'phycitis,' or 'sea-weed stone,' from its similarity to sea-weed. A stone is 'perileucos,' or 'white-around,' when a white line descends (in a spiral) from the margin to the very base of the stone. The 'paeanitis,' or 'Apollo stone,' otherwise known as 'gaeanis', the 'earth stone,' is said to become pregnant and to give birth to another stone, and so is thought to relieve labour pains. Its birthplace is in Macedonia, near the tomb of Tiresias, and its appearance is that of ice.

Phloginos. *Phoenicitis.* *Phycitis.* *Perileucos.* *Paeanitis.*

LXVII. 'Solis gemma,' or 'gem of the sun,' is a bright colourless stone that sheds its beams in such a way as to resemble the sun's shining disc. 'Sagda' is the name given by the astrologers to a leek-green stone which they find, so they say, attached to ships' hulls. 'Samothrax,' or 'stone of Samothrace,' is produced in the island after which it is named, and is black, light in weight and like wood. The 'sauritis,' or 'lizard stone,' is stated to be found in the belly of a green lizard when it has been slit with a reed. The 'sarcitis,' or 'fleshy stone,' closely resembles ox-flesh. The 'selenitis,' or 'moonstone,' a transparent, colourless stone with a honey-coloured sheen,[a] contains a likeness of the moon, and reproduces, if the report is true, the very shape of the moon as it waxes or wanes

Solis gemma (moonstone?). *Sagda.* *Samothrax.* *Sauritis.* *Sarcitis.* *Selenitis (moonstone?).*

182 verum est. nasci putatur in Arabia. Sideritis ferro similis etiam litigio [1] inlata aliquis [2] discordiam facit. nascitur in Aethiopia. sideropoecilos ex ea fit variantibus guttis. Spongitis nomen suum repraesentat. Synodontitis e cerebro piscium est, qui synodontes vocantur. Syrtitides in litore Syrtium, iam quidem et Lucaniae, inveniuntur, e melleo colore croco refulgentes, intus autem stellas continent languidas. Syringitis stipulae internodio similis perpetua fistula cavatur.

183 LXVIII. Trichrus ex Africa venit, nigra,[3] sed tres sucos reddit, ab radice nigrum, medio sanguineum,[4] summo ochrum.[5] Thelyrrhizos, cinerei coloris aut rufi, candidis radicibus spectatur. Thelycardios colore [6] cordis Persas, apud quos gignitur, magnopere delectat; mucul eam [7] appellant. Thracia trium generum est, smaragdina [8] aut pallidior,

[1] etiam litigio *ego* (eti amlitigio dh): est B (*om.* litigio . . . fit): litigio *Sillig*: et litigio L *edd. vett.*: est; maleficio *Mayhoff*.

[2] aliquis F: *om. ceteri codd., Sillig.*

[3] venit nigra B: nigra est d *cod. Poll.*

[4] sanguineum BFh: sanguinem d.

[5] ochrum B: ochram dh.

[6] *post* colore *lac. indicat Mayhoff.*

[7] mucul eam *Detlefsen*: macula quam L: macula Fda: mulc *Sillig cum* B *in indice.*

[8] smaragdina *ego*: ligdini La *cod. Poll.*: isgnidia F: viridis d *edd. vett.*: livida *Mayhoff.*

---

[a] *I.e.*, like iron.

[b] So called because its upper and lower teeth are opposed: probably a sea-bream.

from day to day. It is thought to occur in Arabia. The 'sideritis,' or 'iron stone,' resembles iron and likewise [a] causes some people to quarrel when it is brought to a dispute. It is found in Ethiopia. The 'sideropoecilos,' or 'mottled iron stone,' is a variety of this stone, mottled with specks. 'Spongitis,' or 'sponge stone,' is absolutely true to its name. The 'synodontitis' comes from the brain of the fish known as 'synodus.'[b] The 'Syrtitis,' or 'stone of Syrtis,' is found on the shores of the Gulf of Sidra, and indeed, moreover, in Lucania. It is honey-coloured with a saffron-yellow sheen,[c] and contains faint starry spots inside it. 'Syringitis,' or 'pipe stone,' which resembles the length of a stalk between two of its joints, is hollow, with a tube running right through it.

Sideritis. *Sideropoecilos.* *Spongitis.* *Synodontitis* *Syrtitis.* *Syringitis.*

LXVIII. The 'trichrus,' or 'three-coloured' stone, which comes from Africa, is black, but gives off streaks of three colours, black at the base, blood-red in the middle and yellow at the top.[d] The 'thelyrrhizos,' or 'lady root,' is ashen or red in colour and is distinguished by its white base. The 'thelycardios,' or 'lady heart,' which displays the colour of a heart,[e] gives great pleasure to the Persians, among whom it is found. Their name for it is 'mucul.' The 'Thracia,' or 'Thracian gem,' occurs in three varieties, emerald-green [f] or alternatively paler, while the third

Trichrus. *Thelyrrhizos.* *Thelycardios.* *Thracia (plasma and heliotrope?).*

[c] Or possibly 'it is a brilliant stone with a colour that is a mixture of honey and saffron.'

[d] Perhaps a specimen of ore which was partly magnetite, partly haematite, and partly limonite. *Cf.* XXXVI. 148.

[e] The text may be corrupt.

[f] A *locus desperatus.*

184 in tertio guttis sanguineis. Tephritis lunae novae speciem habet curvatae in cornua, quamvis in colore cineris.[1] Tecolithos oleae nucleus [2] videtur, neque est ei gemmae honos, sed lingentium [3] calculos frangit pellitque.

LXIX. Veneris crines nigerrimi nitoris continent in se speciem rufi crinis. Veientana Italica gemma est, Veis reperta, nigram materiam distinguente limite albo.

185 LXX. Zathenen in Media nasci Democritus tradit electri colore et, si quis terat in vino palmeo et croco, cerae modo lentescere odore magnae suavitatis. Zamilampis [4] in Euphrate nascitur, Proconnesio marmori similis, medio colore glauco. Zoraniscaea [5] in Indo flumine Magorum gemma narratur, neque aliud amplius de ea.

186 LXXI. Est etiamnum alia distinctio, quam equidem fecerim subinde variata expositione, siquidem a membris corporis habent nomina: hepatitis a iocinere, steatitis singulorum animalium adipe numerosa, Adadu renes,[6] eiusdem oculus, digitus;

[1] in colore cineris FLa: cinerei coloris dh.
[2] nucleus adh: nucleo similis L.
[3] lingentium La: tinguentium *Sillig.*
[4] zamilampis *Abel*: zamilamsis B *in indice*: zmilampis Fdh.
[5] zoraniscaea *Sillig cum* B *in indice*: zoraniscaeos F *Mayhoff.*
[6] renes *ego* (reneis h *cod. Poll.*): renis *cod.* a: nepros d *man. Dal.*: nephros *Hermolaus Barbarus*: nephros sive renes *Mayhoff.*

has blood-red spots on it. ‘Tephritis,’ or ‘ash stone,’ displays a likeness of the new moon with curving horns, but on a ground that is the colour of ash. The ‘tecolithos,’ or ‘solvent stone,’ looks like an olive stone and has no value as a gem, but when sucked breaks up and disperses stone in the bladder. *Tephritis.* *Tecolithos.*

LXIX. ‘Veneris crinis,’ or ‘the lock of Venus,’ is a very dark, brilliant stone, which has an inclusion resembling a lock of red hair. The ‘Veientana,’ which is an Italian gemstone found at Veii, has a black ground defined by a white edge. *Veneris crinis.* *Veientana.*

LXX. The ‘zathenes,’ according to Democritus, is an amber-coloured stone found in Media, and if it is ground with palm wine and saffron softens like wax and has a most agreeable smell. The ‘zamilampis,’ which is found in the Euphrates, is like the marble from the island of Marmara, but is greyish-green in the centre. ‘Zoraniscaea’ is said to be a gem found in the river Indus and used by the Magi, but, apart from this, nothing is reported about it. *Zathenes.* *Zamilampis.* XXXVI. 47. *Zoraniscaeos.*

LXXI. There is still another way of classifying precious stones, and it is one which I should like to employ, now that I have already from time to time varied my method of presenting my theme. For there are stones named after parts of the body, for example ‘hepatitis’[a] after the liver, and numerous kinds of ‘steatitis’[b] after the fat found in one animal or another. We find ‘Adad's kidney,’ ‘Adad's eye’ and ‘Adad's finger,’ Adad also[c] being a god who is *Stones named after parts of animals.* *Hepatitis, etc.*

[a] Possibly a variety of haematite, like *hepatites* (XXXVI. 147).
[b] Probably soapstone (steatite): see XXXVI. 159.
[c] *I.e.*, as well as Baal (§ 149).

deus et hic colitur a Syris. triophthalmos in onyche [1] nascitur tres hominis oculos simul exprimens.

187 LXXII. Ab animalibus cognominantur: carcinias marini cancri colore, echitis viperae, scorpitis scorpionis aut colore aut effigie, scaritis scari piscis, triglitis mulli, aegophthalmos caprino oculo, item alia [2] suillo, et a gruis collo geranitis, hieracitis ab accipitre,[3] aëtitis a colore [4] aquilae candicante [5] cauda. myrmecitis innatam formicae repentis effigiem habet, scarabaeorum cantharias. lycophthalmos quattuor colorum est, ex rutilo [6] sanguinea; in medio [7] nigrum candido cingit,[8] ut luporum oculi. taos pavoni est similis, itemque [9] aspidi quam vocari timictoniam invenio.

188 LXXIII. Rerum [10] similitudo est in ammochryso [11] velut auro harenis mixto, cenchrite sparsis milii granis, dryite truncis roborum [12]; haec et ligni modo ardet. cissitis in candido perlucet hederae foliis,

[1] in onyche *Detlefsen*: cum onyche *Gelen*: synonice *aut* synonicae *aut* ionice, *etc. codd.*
[2] item alia da: hyophthalmos *Sillig cum* B *in indice.*
[3] ab accipitre *cod.* a, *cod. Poll.*: ab accipitris (*sc.* collo) *Mayhoff*: accipitris h *Sillig.*
[4] a colore *edd.*: in colore F: colore *cod.* a.
[5] candicante La *Detlefsen, Mayhoff*: candidata dh *Sillig.*
[6] colorum est, ex rutilo Fadh (est *om. codd.*; *ante* colorum *Sillig*): colorum est, rutila *Mayhoff.*
[7] in medio Ldh: media *Mayhoff*: in media Fa.
[8] cingit Fadh: cingitur L.
[9] itemque FL: item *cod.* a.
[10] rerum Fdh: harenarum L.
[11] ammochryso (ammocryso *cod.* a) *Mayhoff ex indice*: hammochryso *ceteri codd.*
[12] roborum *ego*: arborum *codd.*

worshipped by the Syrians. Again, 'triophthalmos' is a variety of onyx that displays the likeness of three human eyes simultaneously.

Stones named after animals.

LXXII. Precious stones are named after animals; for example 'carcinias' takes its name from the colour of the crab, and 'echitis' from that of the viper. 'Scorpitis' is so named because it displays the colour or else the likeness of a scorpion, 'scaritis,' similarly, of a parrot-wrasse, and 'triglitis,' of a red mullet. 'Aegophthalmos' takes its name from a goat's eye, and another stone [a] likewise from a pig's eye. 'Geranitis' owes its name to the crane's neck, 'hieracitis' to the kite and 'aëtitis' to the colour of the white-tailed eagle. 'Myrmecitis' displays a naturally formed likeness of a crawling ant, and 'cantharias' that of scarab beetles. 'Lycophthalmos' is a stone of four colours, red mixed with blood-red, while in the middle it has black encircled by white, like a wolf's eye. 'Taos' is like a peacock; and a stone which I find bearing the name 'timictonia.' similarly resembles an asp in colour.

Eye-agate?

Stones named after inanimate objects.

LXXIII. A resemblance to inanimate objects is found in 'ammochrysus,' or 'sand-gold,' which looks like gold mixed with sand; in 'cenchrites,' or 'millet stone,' which looks as if it were sprinkled with grains of millet; and in 'dryites,' or 'oak stone,' which resembles the trunk of an oak. Moreover, this stone burns like wood. The 'cissitis,' or 'ivy stone,' is a transparent, colourless stone in which ivy leaves are visible,[b] and these cover the whole stone.

[a] *I.e.*, hyophthalmos.
[b] Or possibly 'is a stone with ivy leaves showing clearly on a white ground.'

quae totam tenent. narcissitis ⟨narcissi⟩ venis distinguitur, etiam odore.[1] cyamias nigra est, sed fracta ex se fabae similitudinem parit. pyren ab olivae nucleo dicta est; huic aliquando inesse piscium
189 spinae videntur; phoenicitis ut balanus. Chalazias grandinum et candorem et figuram habet, adamantinae duritiae, ut narrent in ignes etiam additae manere suum frigus. pyritis nigra quidem est, sed attritu digitos adurit. polyzonos in nigro[2] multis distincta lineis candicat, astrapaea in candido aut cyaneo[3] discurrentibus in medio fulminis radiis. in phlogitide intus flamma videtur ardere, quae non
190 exeat, in anthracitide scintillae discurrere. Enhygros[4] semper rotunditatis absolutae in candore leni est; ad motum fluctuatur intus in ea, ut in ovis, liquor. Polythrix in viridi capillaturam ostendit, sed defluvia comarum facere dicitur. sunt et a leonis
191 pelle et a pantherae nominatae. Colos appellavit drosolithum herbaceus,[5] melichrum[6] melleus, cuius plura genera, melichlorum[7] geminus, parte flavus,

[1] narcissitis ⟨narcissi⟩ venis distinguitur, etiam odore *ego*: narcissitis venis etiam hederae distinguitur (et odore distincta d?) Ld: narcissitim (*ad praecedentia refert Mayhoff*) venis etiam cetera (ederae F) distinctam F *Mayhoff*.

[2] in nigro *om.* B: *in uncis ponit Mayhoff.*

[3] in candido aut cyaneo *om.* B: *in uncis ponit Mayhoff.*

[4] enhygros B: enhydros Fdh.

[5] herbaceus FL: *om.* B: chrysolithum aureus, chrysoprasum herbaceus dh, *sed in indice nulla mentio est.*

[6] melichrum F: melichrus est *Sillig ex* B.

[7] melichlorum *Detlefsen*: melichrorum Fh: melichloros est *Hardouin.*

'Narcissitis' is marked with veins coloured like narcissus, and has also its scent.[a] 'Cyamias,' or 'bean stone,' is black, but when broken produces from its interior an object resembling a bean. The 'pyren' is so called because it is like an olive stone: sometimes it looks as if it contains fish bones. The 'phoenicitis' is like a date. 'Chalazias,' or 'hail § 180.
stone,' has the whiteness and the shape of hailstones, and is as hard as 'adamas,' so that even when it is placed in a fire it is said to retain its natural coolness. 'Pyritis,' or 'fire stone,' even though it is black, scorches the fingers when it is rubbed. 'Polyzonos,' or 'many-banded stone,' is marked with a number of white bands on a black ground, while the 'astrapaea,' or 'lightning stone,' on a colourless or blue ground is *Star sapphire?*
traversed in the centre by beams like lightning flashes. The 'phlogitis,' or 'flame stone,' seems to have burning inside it a flame which, however, is not released, while the 'anthracitis,' or 'carbuncle stone,' *Garnet?*
appears to have sparks running in different directions through it. The 'enhygros,' or 'stone with moisture *Enhydros chalcedony?*
inside it,' has a white, smooth ground, and is always perfectly round. When it is shaken, liquid moves to and fro inside it, as in an egg. The 'polythrix,' or 'hairy stone,' displays hairy streaks on a green ground, but, in spite of its appearance, is said to make one's hair fall out. There are also the so-called 'lion-skin' and 'leopard-skin' stones. Colours too have lent their names to stones. 'Drosolithos,' or 'dew stone,' takes its name from its grass-green tint, 'melichrus,' of which there are several kinds, from its honey colour, 'melichlorus,' or 'honey-yellow

[a] The text is corrupt.

parte melleus, crocian croci similitudine quadam spargente, polian canitie,[1] spartopolian rariore.[2] rhoditis rosae[3] est, melitis[4] mali coloris, chalcitis aeris,[5] sycitis fici,[6] bostrychitis in nigro ramosa candidis vel sanguineis frondibus, chernitis[7] velut in

192 petra candidis manibus inter se complexis. Anancitide in hydromantia dicunt evocari imagines deorum, synochitide teneri umbras inferum[8] evocatas, dendritide alba defossa sub arbore quae caedatur securium aciem non hebetari.[9] Sunt et[10] multo plures magisque monstrificae quibus barbara dedere nomina confessi lapides esse, non gemmas. nobis satis erit in his coarguisse dira mendacia Magorum.[11]

193 LXXIV. Gemmae nascuntur et repente novae ac sine nominibus, sicut olim in metallis aurariis Lamp-

[1] croci similitudine quadam spargente, polian canitie *ego*: croci similitudinem quandam spargentem polian canitiem B: croci, polian canitiei similitudinem quandam spargens (*sc.* color) *Mayhoff*.

[2] spartopolian rariore (*sc.* canitie) *ego*: spartopolian rarior B: duriorem nigro spartopolla F: e nigro, spartopolian rarior *Mayhoff*.

[3] rosae *Mayhoff*: rosia *cod.* a: rosae similis B.

[4] melitis mali coloris *om.* B.

[5] aeris L: aeri B.

[6] fici FLh: fico B.

[7] chernitis *Sillig* (*e coni. Iani*): chemites B.

[8] inferum B: inferorum Ldh.

[9] hebetari *aliquot codd.*: hebetari adseverant B.

[10] sunt et *Mayhoff*: et sunt dh *cod. Poll.*: sunt B.

[11] Magorum B: *om. ceteri codd.*

---

[a] The readings are uncertain.

[b] The reading of B, the others being completely nonsensical, is *chemitis*. Jan's conjecture *chernitis* is convincing because the statement *velut in petra candidis manibus inter se complexis*

stone,' from two tints combined, because it is partly yellow and partly honey-coloured; while 'crocias' is sprinkled as if with saffron, 'polias' with a greyish-white tint, and 'spartopolias' with markings of a greyish-white more dispersed.[a] 'Rhoditis' is rose-coloured, 'melitis' apple-coloured, 'chalcitis' copper coloured and 'sychitis' fig-coloured. 'Bostrychitis' has white or blood-red leaves branching out on a black ground, while 'chernitis'[b] presents the appearance of white hands clasping each other on stone. The 'anancitis,' or 'compulsive stone,' it is said, is used in divination by water to conjure up divine apparitions, while the 'synochitis,' or 'holding stone,' so we are told, holds the shades of the dead when they have been summoned from below. As for the white 'dendritis,' or 'tree stone,' it is said that if it is buried beneath a tree that is being felled the edges of the axes will not be blunted. There are many more stones that are even more magical; and these have received foreign names from men who have thus betrayed the fact that they are ordinary, worthless stones, and not precious stones at all.[c] But I shall here remain content with having exposed the abominable falsehoods of the Magi.

LXXIV. New, unnamed precious stones come into existence quite unexpectedly, like one which, according to Theophrastus, was once found in the gold- *New stones etc.* *de Lap.* 32.

is likely to be a feeble attempt to explain a word containing χερ-. Similarly, *chernites* should be read for *chemites* in XXXVI. 132 (see p. 106, n. [a]). Both terms are presumably Egyptian and both stones probably onyx marble.

[c] Pliny implies that, had it not been necessary to conceal the intrinsic worthlessness of the stones, they would have been given intelligible Greek names.

saci unam inventam, quae propter pulchritudinem Alexandro regi missa sit, auctor est Theophrastus.
194 cochlides quoque,[1] nunc volgatissimae, fiunt verius quam nascuntur, in Arabia repertis ingentibus glaebis, quas melle excoqui tradunt septenis diebus noctibusque sine intermissione: ita omni terreno vitiosoque decusso purgatam puramque glaebam artificum ingenio varie distribui[2] venas[3] ductusque macularum quam maxime vendibili ratione sectantium,[4] quondamque tantae magnitudinis factas ut equis regum in oriente frontalia ac pro phaleris
195 pensilia facerent. et alias omnes gemmae mellis decoctu nitescunt, praecipue Corsici in omni alio usu acrimonia abhorrentis. quae variae sunt, et ad novitatem[5] excidere[6] calliditati ingeniorum contingit, utque eaedem[7] nomen usitatum non habeant, physis appellant velut ipsius naturae admirationem in iis venditantes.

Cum finis nominum non sit—quae persequi non

[1] quoque *codd.*: quae *Mayhoff.*
[2] distribui *codd.*: distingui *Mayhoff.*
[3] venas Bdh *Mayhoff*: in venas L *Sillig.*
[4] sectantium dh *cod. Poll.*: spectantium B *Mayhoff*: secantium *Sillig, e lect. marg. Dalecampii.*
[5] novitatem *codd.*: unitatem *Mayhoff.*
[6] excidere Fdh: accedere *edd. vett.*
[7] utque eaedem *Mayhoff*: ut quaedam B: ut *ceteri codd.*, *edd. vett.*

[a] Theophrastus does not mention Alexander. The stone, perhaps chalcedony or opal, was probably given to a Persian king at an earlier date.

mines near Lampsacus and was sent to King Alexander[a] owing to its great beauty. Moreover, 'Cochlides,' or 'shell stones,' are now very common, but are really artificial rather than natural. In Arabia they are found as huge lumps, and these are said to be boiled in honey without interruption for seven days and nights. Thus all earthy and other impurities are eliminated; and the lump, cleansed and purified, is divided into various shapes by clever craftsmen, who are careful to follow up the veins and elongated markings in such a way as to ensure the readiest sale.[b] Formerly, these lumps were produced in such large sizes that in the East they were made into frontlets for kings' horses and into pendants to serve as trappings for them. In general, all gems are rendered more colourful by being boiled thoroughly in honey, particularly if it is Corsican honey, which is unsuitable for any other purpose owing to its acidity. Cunning and talented artists succeed also in cutting away parts of variegated stones so as to obtain novelties;[c] and in order that these selfsame stones may not bear their usual name, they call them 'physis,' or 'works of nature,' and offer them for sale as natural curiosities.

But there is no end to the names given to precious stones, and I have no intention of listing them in

[b] These stones may have been large inferior agates which the workers boiled in honey and acid (*cf.* the reference to acid Corsican honey in § 195) in order to bring out their colours. Mayhoff's reading *distingui*, which has no support from the manuscripts, makes the workers stain the stones with artificial markings.
[c] This may refer to the practice of removing the top layer of an onyx so as to obtain a nicolo.

equidem cogito, innumera ex[1] Graeca vanitate[2]—indicatis nobilibus gemmis, immo vero etiam plebeis, rariorum genera digna dictu distinxisse satis erit. illud modo meminisse conveniet, increscentibus varie maculis atque verrucis linearumque interveniente multiplici ductu et colore saepius mutari nomina in eadem plerumque materia.

196 LXXV. Nunc communiter ad omnium gemmarum observationem pertinentia dicemus opiniones secuti auctorum.

Cavae aut extuberantes viliores videntur aequalibus. figura oblonga maxime probatur, deinde quae vocatur lenticula, postea epipedos[3] et rotunda, angulosis autem minima gratia.

197 Veras a falsis discernere magna difficultas, quippe cum inventum sit ex veris generis alterius in aliud falsas traducere, ut sardonyches e ternis glutinentur gemmis ita ut deprehendi ars non possit, aliunde nigro, aliunde candido, aliunde minio sumptis, omnibus in suo genere probatissimis. quin immo etiam exstant commentarii auctorum—quos non equidem demonstrabo—quibus modis ex crystallo smaragdum tinguant aliasque tralucentes, sardo-

[1] ex d *edd. vett.*: et *ceteri codd., Mayhoff.*
[2] vanitate B: vanitate conficta *ceteri codd., edd. vett.*
[3] epipedos *Turnebus*: epicpedos B.

full, innumerable as they are, thanks to the wanton imagination of the Greeks. Now that I have mentioned the precious stones, and also some, indeed, that are common, I must be content with having given emphasis to the rarer varieties that deserve notice. One point only should be remembered, that, according to the different marks and excrescences that appear on the surface of stones, and according to the varied tracks and colours of the bands that traverse them, names are often altered when the material is commonly the same.

LXXV. Now I shall make some general observations which concern our study of any precious stone; and here I shall adopt the notions of our authorities.

Shapes of gemstones.

Concave or convex stones are considered less valuable than those with a plane surface. An elongated shape is the most valuable; then what is called the lenticular; and then a flat, round shape. Stones with sharp angles find the least favour.

Genuine and false gemstones.

To distinguish genuine and false gemstones is extremely difficult, particularly as men have discovered how to make genuine stones of one variety into false stones of another. For example, a sardonyx can be manufactured so convincingly by sticking three gems together that the artifice cannot be detected: a black stone is taken from one species, a white from another, and a vermilion-coloured stone from a third, all being excellent in their own way. And furthermore, there are treatises by authorities, whom I at least shall not deign to mention by name, describing how by means of dyestuffs emeralds and other transparent coloured gems are made from rock-crystal, or a sardonyx from a sard, and similarly all

nychem e sarda, item ceteras ex aliis; neque enim
198 est ulla fraus vitae lucrosior. LXXVI. nos contra rationem deprendendi falsas demonstrabimus, quando etiam luxuriam adversus fraudes muniri[1] deceat. igitur, praeter illa quae in principatu cuiusque generis privatim diximus, tralucentes matutino probari censent aut, si necesse est, in quartam
199 horam; postea vetant. experimenta pluribus modis constant: primum pondere, graviores enim sunt verae; dein frigore, eaedem namque in ore gelidiores sentiuntur; post haec corpore. ficticiis pusula e profundo apparet, scabritia in cute et capillamenta, fulgoris inconstantia, priusquam ad oculos perveniat
200 desinens nitor. decussi[2] fragmenti, quod in lamina ferrea[3] uratur,[4] efficacissimum experimentum excusate[5] mangones gemmarum recusant, similiter et limae probationem. obsianae fragmenta veras gemmas non scariphant, in ficticiis scariphatio omnis candicat. iam tanta differentia est ut aliae ferro scalpi non possint, aliae non nisi retuso, omnes autem adamante. plurimum vero in iis terebrarum proficit fervor.

Gemmiferi amnes sunt Acesinus et Ganges,

[1] muniri Fd: moneri B.
[2] decussi *edd.*: cussi B: *om.* a.
[3] ferrea *cod.* a: ferri B.
[4] uratur *Haupt*: auratur *cod.* a: moratur B.
[5] excusate *cod.* a: excussate B: excusant *edd. vett.*

[a] It is surprising that Pliny does not refer here to emery (XXXVI. 54, XXXVII. 109), which can work any gemstone except a diamond.

[b] So far as is known, this is not true, although modern grinding methods at least produce enough heat to modify the surface structure of some stones and cause the formation of a 'Beilby layer.'

other gemstones from one stone or another. And there is no other trickery that is practised against society with greater profit. LXXVI. I, on the *Tests.* other hand, am prepared to explain the methods of detecting false gems, since it is only fitting that even luxury should be protected against deception. Apart, then, from the details that I have given in describing the best stones of each class, it is recommended that transparent stones in general should be tested early in the morning or, if necessary, up to ten o'clock, but on no account later than this. Tests are made in many different ways: first by weight, because genuine stones are heavier; then by coolness, since genuine stones also feel colder in the mouth; and after this by structure. For artificial stones show globules deep below the surface, rough patches on the surface itself, filaments, an inconsistent lustre and a brightness that fails to strike the eye. The most effective test is to knock off a piece of the stone so that it can be baked on an iron plate, but dealers in precious stones not unnaturally object to this, and likewise to testing with a file. Flakes of obsidian will not scratch a genuine stone, but on a false stone every scratch leaves a white mark. Furthermore, there is a great difference as between one stone and another in that some cannot be engraved with an iron tool and some only with a blunt iron tool, although all can be worked with a diamond point.[a] § 60.
But what is most effective in working gemstones is the heat generated by the drill.[b]

The rivers that produce gems are the Chenab

201 terrarum autem omnium maxime India. LXXVII. etenim peractis omnibus naturae operibus discrimen quoddam rerum ipsarum atque terrarum facere conveniet.

Ergo in toto orbe,[1] quacumque caeli convexitas vergit, pulcherrima omnium est iis[2] rebus quae[3] merito principatum naturae optinent[4] Italia, rectrix parensque mundi altera, viris feminis, ducibus militibus, servitiis, artium praestantia, ingeniorum claritatibus, iam situ ac salubritate caeli atque temperie, accessu cunctarum gentium facili, portuosis litoribus, benigno ventorum adflatu. quod contingit[5] positione procurrentis in partem utilissimam et inter ortus occasusque mediam, aquarum copia, nemorum salubritate, montium articulis, ferorum animalium innocentia, soli fertilitate, pabuli
202 ubertate. quidquid est quo carere vita non debeat, nusquam est praestantius: fruges, vinum, oleum, vellera, lina, vestes, iuvenci. ne equos quidem in trigariis ullos vernaculis praeferunt.[6] metallis auri, argenti, aeris, ferri, quamdiu licuit exercere, nullis cessit terris et nunc intra se gravida pro omni dote varios sucos et frugum pomorumque sapores fundit.

[1] orbe *Sillig*: orbe et *cod.* a: opebe B².
[2] iis *Mayhoff*: in B.
[3] rebus quae B: rebusque *Gelen.*
[4] optinent B¹: optinet B².
[5] contingit *cod.* a: contigit B.

and the Ganges, and of all the lands that produce them India is the most prolific. LXXVII. For now that I have completed my survey of Nature's works, it is right that I should make a critical assessment of her products, as well of the lands that produce them. This, then, I declare: in the whole world, wherever the vault of heaven turns, there is no land so well adorned with all that wins Nature's crown as Italy, the ruler and second mother of the world, with her men and women, her generals and soldiers, her slaves, her pre-eminence in arts and crafts, her wealth of brilliant talent, and, again, her geographical position and her healthy, temperate climate, the easy access which she offers to all other peoples, her shores with their many harbours, and the kindly winds that blow upon her. All these benefits accrue to her from her situation—for the land juts out in the direction that is most advantageous, midway between the East and the West—and from her abundant supply of water, her healthy forests, her mountains with their passes, her harmless wild creatures, her fertile soil and her rich pastures. Nowhere are the things that man is entitled to expect more excellent—crops, wine, olive oil, wool, flax, cloth and young cattle. Even the native breed of horses is preferred to any other on the training-ground. In ores, whether of gold, silver, copper or iron, no country surpassed her
so long as it was lawful to work them. Now she keeps xxxiii. 78.
them within her womb, and all her bounty lies in the many different liquors and the diverse savours of crops and fruits that she lavishes upon us. Next to

[6] ullos vernaculis praeferunt B: praeferri (referri *cod.* a) ullos vernaculis animadverto *cod.* a *Sillig.*

203 ab ea exceptis Indiae fabulosis proximam equidem duxerim Hispaniam quacumque ambitur mari, quamquam squalidam ex parte, verum, ubi gignit, feracem [1] frugum, olei, vini, equorum metallorumque [2] omnium generum, ad haec pari Gallia. verum desertis suis [3] sparto vincit Hispania et lapide speculari, pigmentorum etiam deliciis, laborum excitatione, servorum exercitio, corporum humanorum duritia, vehementia cordis.

204 LXXVIII. Rerum autem ipsarum maximum est pretium in mari nascentium margaritis; extra tellurem crystallis, intra adamanti, smaragdis, gemmis, myrrinis; e terra vero exeuntibus in cocco, lasere, in fronde nardo, Sericis vestibus, in arbore citro, in frutice cinnamo, casia, amomo, arboris aut fruticis suco in sucino, opobalsamo, murra, ture, in radicibus costo; ex iis quae spirare convenit animalibus in terra maximum dentibus elephantorum, in mari testudinum cortici; in tergore pellibus quas Seres inficiunt, et Arabiae caprarum villo quod ladanum [4] vocavimus; ex iis, quae terrena et maris, conchyliis, purpurae.[5] volucrum naturae

[1] feracem *Sillig* (*e coni. Iani*): facem B.
[2] metallorumque *Sillig* (*e coni. Iani*): aliorumque B.
[3] suis *Sillig* (*e coni. Iani*): uis B.
[4] ladanum *Sillig* (*e coni. Iani*): lanum B.
[5] purpurae *Sillig* (*e coni. Iani*): purpura B.

[a] Particularly cinnabar (XXXIII. 118).
[b] Owing to their hardness, the diamond was never engraved in antiquity, and the true emerald only rarely so. Hence they

Italy, if we leave aside the fabulous marvels of India, I would place Spain, or at least the districts where Spain is bordered by the sea. For although the country is partly rough desert, yet all its productive regions are rich in crops, oil, wine, horses and every kind of ore. So far, Gaul is Spain's equal. But it is Spain's deserts that give her the advantage; for here we find esparto grass, selenite and even luxury—in the form of pigments;[a] here is a place where there is an incentive to toil, where slaves can be schooled, where men's bodies are hard and their hearts passionately eager. XXXVI. 160–61.

LXXVIII. However, to return to products pure and simple, the most costly product of the sea is the pearl; of the earth's surface, rock-crystal; of the earth's interior, diamonds, emeralds, gemstones [b] and vessels of fluor-spar; of the earth's increase, the scarlet kermes-insect [c] and silphium, with spikenard and silks from leaves, citrus wood from trees, cinnamon, cassia and amomum from shrubs, amber, balsam, myrrh and frankincense, which exude from trees or shrubs, and costus from roots. As for those animals which are equipped to breathe, the most costly product found on land is the elephant's tusk, and on sea the turtle's shell. Of the hides and coats of animals, the most costly are the pelts dyed in China and the Arabian she-goat's tufted beard which we call 'ladanum.' Of creatures that belong to both XII. 73. land and sea, the most costly products are scarlet and purple dyes made from shell-fish. Birds are

are here distinguished from *gemmae*, which in this passage must refer to engraved gemstones.
[c] In antiquity it was thought to be a berry.

praeter conos bellicos[1] et Commagenum anserum adipem nullum adnotatur insigne. non praetereundum est auro, circa quod omnes mortales insaniunt, decumum[2] vix esse in pretio locum, argento vero, quo aurum emitur, paene vicensimum.

205 Salve, parens rerum omnium Natura, teque nobis Quiritium solis celebratam esse numeris omnibus tuis fave.

[1] bellicos *Sillig* (*e coni. Iani*): bellicas B.
[2] decumum *Sillig* (*e coni. Iani*): de mum B.

credited with no outstanding contribution except warriors' plumes and the grease of the Commagene goose. We must not forget to mention that gold, for which all mankind has so mad a passion, comes scarcely tenth in the list of valuables, while silver, with which we purchase gold, is almost as low as twentieth.

Hail, Nature, mother of all creation, and mindful that I alone of the men of Rome have praised thee in all thy manifestations, be gracious unto me.

INDEX OF ARTISTS

With a few exceptions all references are to Book XXXVI.

INDEX OF ARTISTS

MUSEOGRAPHIC INDEX

With a few exceptions all references are to Book XXXVI.

INDEX OF ARCHITECTURE AND ENGINEERING

All references are to Book XXXVI.

ARCHITECTURE AND ENGINEERING

INDEX OF MINERALS

Those occurring in Pliny's own alphabetical list and special summaries (XXXVII 139–192) are for the most part not included.

INDEX OF MINERALS

INDEX OF MINERALS

Printed in Great Britain by Richard Clay (The Chaucer Press), Ltd., Bungay, Suffolk